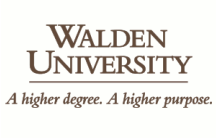

2017

Telemedicine: An Augmentation Strategy to Mitigate the Primary Care Shortage

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2017

Abstract

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by

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MBA, Columbia University, 2003

MPA, Troy University, 1992

BS, Valdosta State University, 1985

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2017

Abstract

According to the Association of American Medical Colleges, the primary care workforce shortage in 2025 will exceed 46,000 primary care physicians. Healthcare business leaders in Gwinnett County, Georgia have not evaluated the advantages and disadvantages of telemedicine (TM) to mitigate the workforce shortage. The purpose of this qualitative descriptive study was to determine factors primary care physician administrators consider when deciding to implement TM as a potential solution for the growing physician shortage. A purposive sample of 20 primary care physician administrators located in Gwinnett County, Georgia was drawn. The theory of disruptive technology was the conceptual framework. Data collected stemmed from semistructured interviews with each participant and review of organizational plans and workflow documents. Data were recorded, transcribed, and coded to develop themes. Three themes morphed from the study: TM awareness and education, TM cost and reimbursement, and TM implementation and utilization. Results indicated that awareness and education of leaders toward TM requires improvement, costs, and reimbursement were variables for deciding to implement or not implement TM, and TM implementation requires knowing the appropriate use of TM. The implications for positive social change include the potential for primary care physician administrators to positively influence the healthcare workforce shortage by adding flexibility to manage patient workflow with TM. Additionally, the potential for physician administrators to utilize TM for healthcare access, creating savings in transportation, energy consumption, and resource optimization, may provide better access to hard-to-reach populations.

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Dedication

This doctoral study is dedicated to my family. To my wife, Danielle, you always supported me through career aspirations and transitions. You personally witnessed the highs and the lows, the better and the worse, and the richer and the poorer. I am indeed grateful to dedicate this accomplishment to you as the backbone of my career, life, and world. To my children, you have been my #1 support and biggest cheerleader, and I am very happy for your constant encouragement. Through this process, I worked diligently to set the cadence for personal achievement. My hope is you establish your personal, spiritual, and professional goals and pursue them with tenacity second to none.

Acknowledgments

I want to thank my family for understanding why dad could not play or go visiting on Sunday afternoons for almost 3 years. I want to thank my wife, Danielle, for loving and supporting me through my professional and educational career. She has been awesome. I want to thank Alesia, my daughter, for her love and devotion. She has been a wonderful daughter! I want to thank Nicholas, my son, for knowing how to keep me living life to the fullest and looking at children's movies. I would also like to acknowledge the support of my committee members—Dr. Alen Badal, Dr. Charles Needham, and Dr. Freda Turner.

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Section 1: Foundation of the Study

Exploring the adoption of telemedicine (TM) in primary care and how TM may affect the growing shortage of health providers is essential to the future of healthcare. The primary care workforce shortage in 2035 will exceed 44,000 primary care physicians (Petterson, Law, Tran, & Bazemore, 2015). Senior healthcare administrators are facing an increasing conglomeration of priorities, including the growing shortage of primary care providers (O'Shea, Berger, Samra, & Van Durme, 2015). The priorities are deflecting time, effort, and resources away from dispersing the TM platform into the healthcare community.

After an extensive review of current literature, Doarn et al. (2014) noted that TM is the use of medical information transmitted from one site to another using electronic communications to improve patients' health status. Secure TM involves transferring real-time or delayed video and audio data electronically from patient location to professional healthcare location (Doarn et al., 2014). Healthcare providers equipped with TM have two-way and secure video conversations with patients through Internet connections to evaluate, diagnose, and treat illnesses (Doarn et al., 2014).

Within other industries, technologies are essential to winnowing inefficiencies, cost escalation, and productivity issues. The same is true for the healthcare industry; however, complex contextual dynamics within healthcare businesses slow the rate of comprehensive adoption of health information technology (Ajami & Bagheri-Tadi, 2013). From healthcare systems to individual physicians to patients, TM positively

allows physicians to transcend geographic and socioeconomic boundaries to deliver high quality care to distant locations and/or in-need patients (O'Shea et al., 2015).

The financial impact can reflect segmentation into near and long-term implications for both suppliers and recipients. Healthcare providers can use TM to balance acute and chronic care; this provides an avenue to build revenue and efficiencies. The U.S. Department of Veterans Affairs (VA) patients captured relief from distances traveled to VA facilities; and VA achieved financial savings in travel pay, reaching 3.5% of total travel pay budget in 2013 (Russo, McCool, & Davies, 2015).

The abundance of variability, including size, fiscal policy, and bureaucracy, between small and large hospital systems and the cost of implementing technological advances is an ever-present barrier facing senior healthcare administrators. Healthcare systems' leaders altered their approach delivering patient services in response to the epidemiologic and demographic trends and recent technological challenges to cope with multimorbid elderly frail patients (Hopman et al., 2016). Healthcare administrators are collaboratively launching various strategies to evolve from fee-for-service payment models to value-driven models such as accountable care organizations (ACOs), patient-centered medical homes, and individual practice associations (Bartels, Gill, & Naslund, 2015). Evolving to value based healthcare represents a significant departure from the status quo of healthcare delivery (Bartels et al., 2015).

Combining forces to achieve a greater advantage is not a new concept. ACOs are integrated healthcare systems designed to elevate cost accountability to linked and shared services (Bartels et al., 2015). ACOs work to reduce inefficiencies and unnecessary costs

in healthcare channels by owning the responsibility of a patient's health. The collaborative efforts of ACOs offer multiple opportunities to generate resource optimization within a community of healthcare providers and services.

The U.S. government increased participation in the exploitation of TM through a series of incentives designed to encourage investment in technological implementation and bolster the healthcare system (Rechel et al., 2016). Bartels et al. (2015) noted nine initiatives focused on addressing high cost, complex, and vulnerable patient populations. Government intervention with monetary incentives and deadlines enable healthcare providers to embrace and optimize technology to record individualized health records. Benefits will reflect reducing errors, achieving outcomes, and establishing connectivity.

Background of the Problem

The primary care business model in the United States has not incorporated TM as a solution for the growing physician shortage. The primary care business continues to confront escalating costs, healthcare inequities, minimal integrations, prescription mistakes, inconsistent outcomes, technology advancements, and workforce shortages (Vimarlund & Le Rouge, 2013). Federal government administrators have designed initiatives to incorporate electronic health records (EHR) into the healthcare system to improve connectivity. The effort challenges strategic implementation at all levels since there is no universal connection system.

Discussions related to the healthcare business must revolve around the efficient treatment of the patient. Business leaders discuss similar issues of access to healthcare, operational efficiency, strategic development, and execution of tactical deployments

(Ishfaq & Raja, 2015). Historically, the same primary care leaders shaped the delivery of healthcare establishing evidence-based solutions to remedy patient concerns. Primary care leaders face an innovation conundrum when deciding how to implement new technology efficiently (Koopman et al., 2014).

Healthcare providers accept technological advances at a slower pace (Ajami & Bagheri-Tadi, 2013). Healthcare inequities during patient–physician communication and observation affect access to primary care, length of appointments, and depth of care discussions (Ishfaq & Raja, 2015). The data on healthcare disparities are comprehensive and important to theoretical implications for population health management (Beck, Finch, Lin, Hummer, & Masters, 2014). The quantity of medical errors within the system challenges all health outcomes and quality measures (Daker-White et al., 2014). Medical professional shortages are influencing strategic sessions of primary care administrators throughout the industry (Rajan, Seidmann, & Dorsey, 2013). Senior administrators include physician shortages, medical errors, and treatment disparities in a long list of priorities.

Although EHRs optimize data-gathering capabilities, software variability of EHR systems may affect the portal-to-portal interface effectiveness among hospitals (Heintzman et al., 2014). The gap prevents patients from developing an optimized relationship with their primary care physician. Constraints, such as EHR utilization, challenge communications among (a) primary care offices, (b) emergency rooms, (c) safety net clinics, or (d) pediatric emergency departments (Yeager, Walker, Cole, Mora, & Diana, 2014). A fragmented system occurs with limited opportunity to diminish

duplication of services, reduce inefficiencies, and collaborate on care pathways (Yeager et al., 2014). The healthcare system addresses diverse challenges in improving quality, outcomes, and cost reductions; however, TM may provide an opportunity to extend the reach of each healthcare system into the rural areas (Russo et al., 2015).

Healthcare disparities in rural areas can present challenges to some providers. Ohl et al. (2013) noted that rural patients with human immunodeficiency virus (HIV) face care challenges at many levels. Ohl et al. surmised that patient-level barriers include travel burdens when securing care, inadequate access to transportation, and risk for social isolation that may limit access to information about care options from peers living with HIV infection. Physician, care site, and healthcare system-level challenges include limited availability of physicians and health facilities with experience in HIV medicine and poor rural access to critical health services, such as mental health and substance use treatment (Ohl et al., 2013).

Advancing technologies like TM may offer the most promising solutions for interconnecting the healthcare system and minimizing the issues confronting the mission of delivering healthcare (Bashshur, Shannon, Krupinski, & Grigsby, 2013). The pace of technological advances and costs associated with deploying a comprehensive technology strategy is prohibitive throughout the delivery system. Primary care administrators face complicated priorities focused on clinical decision support systems, physician-order entry protocols, health information exchanges, and patient and provider education and research (Bashshur, Shannon, Krupinski, et al., 2013). Yousefi et al. (2017) noted that central actors driving adoption of new processes and procedures confront informal networks

creating support but at times creating opposition.

Decision makers assess the advantages and disadvantages of system improvements with the rising demands to show improved outcomes and cost containment (Bashshur, Shannon, Krupinski, et al., 2013). Recent technological introduction of EHRs proved challenging and at times discouraging. Yeager et al. (2014) noted that barriers to EHR adoption were technical issues, costs, competitive concerns, data privacy, security concerns, and workflow implementation challenges. The introduction of EHR yielded significant productivity changes described as complete documentation, waiting on the upload and download of information, and Internet outages. Primary care providers experienced workflow efficiency, transcription cost reductions, and immediate access to data at multiple locations (D. Li & Korniewicz, 2013). Coupling the improvements to TM may offer clinicians a more comprehensive reach into the community. Healthcare administrators may enrich their ability to incorporate a robust data-mining process including data from outreach locations.

Developing a stronger capability around data analytics provides healthcare administrators with insight to the progress made from each patient encounter (Raghupathi & Raghupathi, 2014). Knight and Shea (2014) noted that use of health-enabling technologies support relationships among patients' behaviors, patients' unique characteristics and context, and patients' individual goals. Data processed through the integration of data, information, and knowledge support patients and healthcare leaders in decision-making across roles and settings. All of the technological advancements are

targeting better healthcare outcomes, higher quality of service, and reduced costs of goods.

Problem Statement

A shortage of physicians exists in the United States, and business leaders have not decided to deploy TM as a frontline solution for mitigating the workforce shortages (Bowen, Bosworth, & Roumie, 2013). In 2012, Medicare TM-related expenditures fell short of budget by 34.8% of total allowed TM-related charges (Neufeld & Doarn, 2015). The general business problem is that the primary care physician administrators have not comprehensively established TM strategies to diminish the physician workforce shortage (Nouhi, Fayaz-Bakhsh, Mohamadi, & Shafii, 2012). The specific business problem is that some primary care physician administrators may lack critical decision-making knowledge to implement TM as a potential solution for mitigating the physician workforce shortage.

Purpose Statement

The purpose of this qualitative descriptive study was to determine factors primary care physician administrators consider in decision making to implement TM as a potential solution for the growing physician shortage. To obtain data and understand the characteristics of TM adopters versus nonadopters, primary care physician administrators participated in this study by face-to-face interviews. I also reviewed company documents that pertain to workflow to demonstrate methodological triangulation. The participants for the study were primary care physician administrators who are working in medical practices in Gwinnett County, Georgia.

The outcomes of the study could promote positive social change by contributing knowledge that may prove useful in catalyzing the appropriate deployment of TM as a frontline solution for mitigating the workforce shortage of providers. The results of the in-depth interviews, document reviews, and workflow analysis may help primary care physician administrators provide more environmentally friendly strategies to practice medicine. The augmentation strategy for primary care provides an understanding of using TM to treat acute versus chronic ailments. The implementation of TM may provide relief from environmental impacts such as emissions of carbon dioxide and other greenhouse gases (Holmner, Ebi, Lazuardi, & Nilsson, 2014).

Nature of the Study

The study incorporated a qualitative, descriptive design. Such an approach provided a complete summary of an event in the everyday terms of those events (Sandelowski, 2010). In this heading, discussion includes the rationale for employing qualitative method and descriptive design to address the specific business problem and purpose of this study.

Researchers often use one of three research methods for conducting scholarly research: (a) qualitative, (b) quantitative, or (c) mixed method (Leedy & Ormrod, 2013). The qualitative method provides an approach rather than a particular set of techniques used in the quantitative method (Morgan & Smircich, 1980). The appropriateness of the qualitative method is contingent upon the nature of the phenomena to be studied (Morgan & Smircich, 1980). The quantitative method includes patterns and trends through statistical methods and is not appropriate for the current project, and the research question

for this project does not require patterns and trends (Leedy & Ormrod, 2013). A lack of peer-reviewed statistical analyses, time constraints, and limited resources prevent the use of the quantitative method. A mixed study, qualitative and quantitative combined, would include a more in-depth review using triangulation methods; however, the mixed methodology would require additional time and challenge the study's completion constraints (Leedy & Ormrod, 2013). After evaluating each method, the qualitative method satisfied the robust exploration and timely completion criteria needed for the study. The qualitative method is the best choice for the study to develop an in-depth view of the characteristics, attitudes, and behaviors of study participants.

Common designs used in qualitative research are comparative, descriptive, case study, ethnography, phenomenological, grounded theory, and content analysis (Leedy & Ormrod, 2013). After reviewing each design, phenomenological, comparative, ethnography, grounded theory, and content analysis were not appropriate. Ethnography uses fieldwork to study groups, and grounded theory seeks to uncover new theories from analyzes (Moustakas, 1994). Case study is an in-depth inquiry into an individual life cycle, small group behavior, or maturation of industries over a sizeable amount of time (Yin, 2014) and would not have provided meaningful linkage into the perspectives of healthcare providers. The phenomenological design effectively addresses how participants' experiences and resultant perceptions represent the phenomenon (Moustakas, 1994). Sandelowski (2010) characterized descriptive as the design that interprets low inference by remaining close to the surface of words. Low inference would allow for exploration of who, what, and where of TM events (Sandelowski, 2010).

The best design for the current study was qualitative descriptive to ensure findings remain close to the everyday language of primary care physician administrators utilizing or not utilizing TM. The research process included face-to-face interviews with primary care physician administrators, review of documentation, and analysis of workflow.

Research Question

The overarching research question for this study follows: What influences primary care physician administrators' decision-making processes to implement or not implement TM as a solution for the workforce shortage?

Interview Questions

The modification to Moore and Benbasat's (1991) instrument for this study consisted of refining the instrument from technology adoption to TM adoption. The instrument Moore and Benbasat used was designed to measure various perceptions that an individual may have regarding adopting information technology innovation. I received permission from Dr. Izar Benbasat to adapt the instrument for my study. Due to not implementing the instrument exactly as validated, I obtained permission to modify and implement the survey from Dr. Benbasat. Leedy and Ormrod (2013) stated that reliability and validity are specific to each situation. Therefore, the instrument may not have been valid and reliable in this context.

Each interview question referenced at least one of the eight constructs utilized by Moore and Benbasat (1991) to characterize the perceptions of primary care physician administrators in adopting or not adopting TM. The design of Interview Questions 1 and 2 led to participant descriptions of voluntariness. Participants described their perceptions

of relative advantage in Questions 1, 2, and 3. The responses to Questions 3, 4, 5, and 6 elucidated participant descriptions of compatibility. Participants described their assessment of image when answering Questions 8 and 9. Participants elaborated on their understanding of usability in Questions 4, 6, and 7. Participants addressed demonstrability of technology in healthcare when responding to Question 7. Responses to Question 10 reflected the respondents' perceptions of trialability and visibility of TM in healthcare.

Primary care physician administrators answered Questions 1 and 6 relating to decision making and provided answers to Questions 1, 4, 5, 8, and 9, which relate to key influences. To understand implementation, participants provided answers to Questions 7 and 10. During face-to-face interviews, participants answered Questions 2 and 3 and addressed workforce shortage and the action or actions that mitigate the growing shortage. Following are the 10 semistructured interview questions for the study for primary care participants:

1. From your experience, how do you describe and define the meaning, structure, and essence of your technological experiences with TM as a primary care provider?
2. Considering your experiences, please describe your understanding and interpretation of the available options for mitigating the growing shortage of primary care providers.
3. What criteria would you use in assessing the potential efficacy of TM when evaluating the available options for the workforce shortage?

4. From your experience, please describe how the conflict between workflows and technology advances within your office.
5. From your experience, please describe how your organization addresses the need for more efficiency within the business.
6. Please explain the factors in assessing the *complexities* (if any) that affect decisions within your healthcare business. Please explain how these complexity factors may affect the adoption of TM.
7. From a primary care perspective, how would you describe the implementation steps taken to ensure TM and other technologies meet the objective to improve healthcare?
8. Considering your experiences, please describe how TM may influence the internal and external reputation of the organization.
9. From your experience, please describe if you feel TM may negatively influence the internal and external reputation of the organization.
10. What implementation strategies and techniques have worked for your organization to ensure visibility and trialability of new technologies, such as TM, or any others, you may want to share?

Conceptual Framework

Two theories include a conceptual framework for exploring the decision-making processes between primary care physician administrators who have and have not adopted the technology: (a) disruptive technology and (b) diffusion of innovations. Investigators used these theories to shape the conversation surrounding the advancement of technology

in various industries (Rogers, 2003). The theory of disruptive technology includes three important aspects: (a) the conflict between antiquated workflows and technology advances, (b) the construction of more efficiency within business, and (c) the assessment of complexities affecting the decisions within the system (Fried, 1969). The diffusion of innovations theory contains eight dimensions of diffusion. The eight constructs are voluntariness, relative advantage, compatibility, image, usability, demonstrability, visibility, and trial ability (Rogers, 2003).

Conflicts between new technologies and existing platforms have destroyed companies in their current forms (Fried, 1969). The conflicted differences identified by researchers were the ages of employees in the workplace and younger workers entering the workplace. An examination of how leaders introduce disruptive technology in healthcare revealed that the introduction of new technologies in health systems could result in struggles and chaos (Hwang & Christensen, 2009). These struggles, coupled with delivery system complexities, provide an inside view of challenges faced by leaders when adopting technologies into hospital delivery systems (Hwang & Christensen, 2009).

Minute clinics and other urgent care center officials influence the business process models under which primary care operates. In addition, urgent care officials disrupt the process of how they compete for consumer acquisitions, conversion, and retention by unique offerings not found in primary care offices (Qin, Prybutok, & Prybutok, 2016). Karimi and Walter (2015) added to the disruptive theory analyzing the effect of technologies on decision making and complexities associated with

implementation. The investigators provided a detailed assessment of how these technologies shift paradigms and change the marketplace.

Uscher-Pines and Kahn (2014) noted the importance of alignment between stakeholders and implementers. The alignment of leadership provides an expectations bridge for successful collaboration and implementation throughout the effective functional units (Uscher-Pines & Kahn, 2014). Uscher-Pines and Kahn (2014) noted a lack of physician buy-in, misaligned incentive, and usability of technology as barriers to adopting disruptive technology. Disruptive technologies have the ability to minimize a company's competitive edge if marketplace intelligence does not change internal thinking and facilitate adaptation to a flexible and precise approach (Hwang & Christensen, 2009).

Operational Definitions

The following definitions are for terms that appear in the study to provide an understanding of the healthcare terminology.

Digital technologies: Digital technologies refer to technologies such as mobile devices, smartphone applications, wearable technologies, and remote sensors (Naslund et al., 2017).

E-health: E-health refers to remote services using technologies, such as the Internet, to enhance the status of a patient's health (North et al., 2014).

Electronic health records (EHRs) or electronic medical records (EMRs). The terms describe the electronic records archiving process for patient record keeping (Jones, Weiner, Shah, & Stewart, 2015).

Telemedicine (TM). TM is the exchange of advanced electronic communications and information technologies in the context of clinical healthcare activities that deliver care across geographic boundaries. TM includes provisions for health advice, access to self-help groups, safety and security monitoring, and personal monitoring (Purcell, McInnes, & Halcomb, 2014; Tsai, 2014).

Trialability. Trialability expresses how individuals may experiment with an innovation for a limited period of time (Rogers, 2003).

Assumptions, Limitations, and Delimitations

Assumptions

Facts assumed in the study fall into three categories: (a) primary care providers, (b) workforce shortage in healthcare, and (c) healthcare delivery systems. The first category contained assumptions that primary care providers will work to alleviate the workforce shortage. Primary care providers relentlessly pursue excellence in delivering healthcare in the most feasible manner possible. Primary care providers believe technology has a place in healthcare. In the second category, awareness of growing workforce shortage is at the forefront of healthcare administrators and primary care providers. Strategic priorities of healthcare delivery systems include averting the workforce shortage using innovation as a conduit.

Other assumptions revolve around primary care professionals' interests in sharing their opinions. The first assumption is that participants understand the primary care business model. Participants will offer viewpoints, positive or negative, about the primary care business model, technology in healthcare, and consumer experience.

Limitations

The domain for the study consisted of Gwinnett County, Georgia. One of the limitations was the validation of informants and their qualifications for representing the healthcare field. Participant recruitment came from various online mechanisms, such as LinkedIn® and WebMD® directories, limiting the participation of primary care physician administrators not connected through online network communities. Primary care providers with access and knowledge of technology in healthcare participated in the data collection process. Some of the ideas presented may soon appear obsolete in light of the pace of technological change.

The instrument validated and used by Moore and Benbasat (1991) collected various perceptions that an individual may have regarding adopting information technology innovation. I received permission from Dr. Benbasat to adapt the instrument for my study. From not implementing the instrument exactly as validated, I obtained permission to modify and implement the survey from Dr. Benbasat. Leedy and Ormrod (2013) stated that reliability and validity are specific to each situation. Therefore, instrument may not have been valid and reliable in this context.

To enhance reliability and validity, I reviewed five strategies identified by Leedy and Ormrod (2013): (a) administer the instrument in a consistent manner, (b) establish specific criteria for the investigator's judgments, (c) consult literature for techniques effectively used by other researchers, (d) show the first draft to experienced colleagues to gain feedback, and (e) conduct a small pilot to try out an instrument. For my study process, I completed three of the five strategies. I consulted the literature for effective

measurement techniques used by other researchers and showed the first draft of the questions to colleagues. Last, I administered data collection in a standardized way with each participant following an interview protocol. With these strategies implemented, my intent was to enhance reliability and validity.

Delimitations

Delimitations are characteristics in the study that limit the scope and define the boundaries of the study (Leedy & Ormrod, 2013). The opportunities for using TM as a core business strategy are too numerous to explore in the current study, where the lack of focus within the industry may reveal the problems associated with adoption. The geographic domain for the study consisted of Gwinnett County, Georgia. The data collection of the study included face-to-face interviews and document reviews. The scope of the study was the primary care business model instead of other medical specialties such as cardiology, neurology, and dermatology within the healthcare system.

Significance of the Study

The potential significance of the study was defining meaningful communications for defining a model for catalyzing TM adoption within the primary care business model for a comprehensive distribution of the benefits. Helping healthcare administrators and operational decision makers understand the benefits and applications of TM are important to successfully accelerating the adoption of TM. The *business as usual* mindset is prevalent and impedes the catalyst for growth (LeRouge & Garfield, 2013).

Contribution to Business Practice

The current exploration of TM included an investigation into how healthcare administrators decide to, or decide not to, integrate TM into the augmentation strategy for mitigating the growing workforce shortage. Findings from this qualitative descriptive study may provide a summary of events in the everyday terms of those events (Sandelowski, 2010). The findings identified from the study may help shape the dialog between primary healthcare providers and healthcare business leaders. Primary healthcare administrators may understand the beneficial effect of TM and execute strategies for driving primary care physician adoption of TM.

Implications for Social Change

The problems facing TM programs relate to economic and behavioral factors. Economic elements include ongoing processes overlapping and often inconsistent regulatory frameworks, decreasing amounts of grant support, struggling advancement of reimbursement schedules, increasing costs of equipment and peripherals, and limiting Internet access (Taylor, Coates, Wessels, Mountain, & Hawley, 2015). Behavioral factors refer to the *business as usual* mentality, fear of change, lack of patient awareness, and attitude toward technology. Applying TM in the primary care business model provides a unique opportunity to address social change. The challenges are clear, and recipients of the healthcare delivery system deserve better patient experiences, improved outcomes, and lower costs. Globally, the benefit for rural and austere locations is evident (Martin-Khan et al., 2015).

Researchers have agreed about the need of TM within rural and austere settings around the world; however, the issue of TM is in the discussion around comprehensive healthcare (Rechel et al., 2016). The introduction of TM in rural and austere environments could change the long-range development goals in third-world nations, rural geographies, and austere environments. The primary care delivery model fits the use of TM applications to increase access to specialty care in rural areas, decrease travel time and save money for patients and caregivers alike, provide the potential for earlier disease intervention, enhance support between primary care physicians and specialists, and serve as a medium for education and collaboration (Meyers, Gibbs, Thacker, & Lafile, 2012). According to the literature, the infrastructure and integrated approach is pertinent to changing healthcare in underprivileged locations around the world.

The combination of an increasing, chronically ill patient population, a growing list of healthcare complexities, and an increasing physician shortage place a significant burden on the healthcare system. Chronically ill patients represent 75% of healthcare spending (Dinesen et al., 2016). The benefits of TM for older adults are timely, high quality, patient-centered, acute care (Shah, Gillespie, et al., 2013). Adults are retiring from occupations in which technology is commonplace—from smartwatches to smartphones to iPads. The wireless and broadband infrastructure has improved capabilities throughout the United States (Meyers et al., 2012). TM augments the workforce from home health monitoring to monitoring within intensive care units (Goran, 2012). The benefits of TM aid the healthcare workforce in goal attainment to reduce

cost, improve outcomes, and provide better quality experiences (LeRouge & Garfield, 2013).

A Review of the Professional and Academic Literature

The purpose of this qualitative descriptive study was to determine factors primary care physician administrators consider in decision making to implement TM as a potential solution for the growing physician shortage. A literary review of refereed journal articles, research documents, and peer-reviewed books through the Walden University Internet Library search engine assessed TM and the growing shortage. The majority of the materials referenced came from Walden University's subscription service using Business Source Complete, Management and Organization Studies, and ProQuest Dissertations. A number of references came through Mary Ann Liebert, Incorporated Publishers, a website-based publications clearinghouse. A small number of references came through web search engines, such as Google Chrome® and Yahoo®, which provided additional insight.

The search included over 23,959 titles. The content of the literary review included acceptable peer-reviewed journals and sound academic journals. All of the journals listed in this review passed through the Ulrich database of refereed journals. For the study, the breakdown of the articles was 23 articles (pre-2013), 50 articles (2013), 34 articles (2014), 35 articles (2015), 18 articles (2016), and 7 articles (2017). Of the research articles sourced, 85.6% were between 2013 and 2017. The majority of the studies published after 2013, which reflects the growing field of research for TM.

An analysis of the reference pool identified only a few studies published discussing TM marketing to healthcare systems. The reviewed research focused on understanding TM and assessing what TM is to healthcare providers. Other research topics included how TM influences healthcare systems, the variety of ways to use TM, TM employment in austere environments, and TM in the rural healthcare delivery models. The review of the literature provided sufficient evidence to suggest researchers focused on implementation using publicly funded grants (Velianoff, 2014). The literature was not comprehensive in providing an overview of companies working to develop a sustainable business model through commercialization and market penetration. The research study references reflect important word searches on TM, telehealth, telepsychiatry, healthcare, health, marketing, and consumer, patient, and adoption rates.

The most significant studies considered in the literature review began with information offering the characteristics of direct influence to the healthcare delivery systems. Eight literary themes scrutinized relate to this study: (a) a shortage of healthcare providers, (b) an overview of TM in healthcare, (c) four strategies for technology in healthcare, (d) a view of the technological forerunners of TM, (e) influence of TM, (f) the uses of TM, (g) a discussion of TM implementation, and (h) the benefits of TM for healthcare delivery. The next section contains a thematic review that exposed the information characteristics of successful TM implementation.

Workforce Shortage of Healthcare

The literature yields a thorough discussion regarding healthcare workforce shortages and implications on the future of healthcare. O'Shea et al. (2015) stated that 57

countries have a combined shortage of 4.5 million healthcare professionals. In the United States, Green, Savin, and Lu (2013) noted that the healthcare workforce shortage could worsen as the ratio of one provider for every 2,500 patients stagnates and the nation's population grows. Czaja (2016) described an increase of people greater than 65 years of age by 2040 and a decline in the number of people available to provide medical care for older adults. The Affordable Care Act, which expands provisions to insure approximately 32 million individuals, compounds the complexities of the healthcare workforce shortage (O'Shea et al., 2015).

From medical school curricula to frontline executive teams, healthcare leaders are developing strategies to alleviate the problem. The workforce shortage exists between the supply of healthcare providers and the demand for healthcare services by patients (Czaja, 2016; Green et al., 2013). Healthcare researchers noted the widening of the gap in the United States and proposed solutions to minimize the effects of an overburdened healthcare system (Green et al., 2013). Overburdening will continue with the Affordable Care Act estimated at increasing demand by 2.5% (Huang & Finegold, 2013). This subsection includes the primary care professional shortage, identifies reasons for the shortage, and provides a synopsis for the action steps by healthcare leaders.

The Health Resources & Services Administration (2013) projected the shortage of healthcare providers to be 20,400 by 2020 (p. 2). The difference transcends medical specialties and geographic limitations. Geographic challenges confront leaders when distinguishing between increasing the number of medical school graduates to healthcare providers practicing in urban versus rural geographies (Nouhi et al., 2012). Healthcare

researchers found that areas with an increased supply of healthcare providers still had problems of maldistribution (Nouhi et al., 2012). The healthcare workforce shortage is central to the debate between urban versus rural.

Throughout the literature, researchers revealed population growth, expansion of healthcare coverage, and healthcare workers' migration (Green et al., 2013). O'Shea et al. (2015) contended that shortages relate to the constant levels of graduate medical education funding and residency slots and healthcare employees working in areas that are more affluent. The reasons for the shortage are multidimensional and complex. Researchers have not agreed on the primary issue, but the reasons can come from a medical community and a patient population perspective. The workforce shortage relates to patient population aging within the United States (Petterson et al., 2015). Bodenheimer and Smith (2013) stated an aging population magnifies the demand for chronic care services and amplifies the gap in primary care supply. Other contributory factors consist of 32 million uninsured patients moving into the primary care system because of the Patient Protection and Affordable Care Act of 2010 and healthcare reform (Huang & Finegold, 2013; J. L. Kessler & Phillippi, 2015).

The medical community's reason for the growing shortage include the migration of primary care physicians to support affluent patients in urbanized areas (O'Shea et al., 2015). Healthcare workers predominantly work in urban settings in comparison to less populated, rural communities (O'Shea et al., 2015). Primary care is not a preferred specialization by graduating medical students (Royston, Mathieson, Leafman, & Joan-Sheehan, 2012). Royston et al. (2012) noted medical students choose specialties for the

higher financial incentives and other incentives. Royston et al. denoted financial rewards for primary care physicians are not as attractive as incentives for specialized medical businesses. Youngclaus, Koehler, Kotlikoff, and Wiecha (2013) noted that medical residents avoid selecting the primary care specialty because medical school loan repayment seems economically unfeasible. From a systematic point of view, societal pressures are calling for improved outcomes and greater access.

The priorities of healthcare administrators define how a healthcare delivery system addresses important issues while focusing on patient care. The focus on the patient helps leadership maintain the integrity of the medical strategy. Healthcare leaders identified more team-based approaches and employed more technology to ease the demand–supply issues (Auerbach et al., 2013).

The healthcare workforce shortage in the United States is a crisis for the quality of healthcare rendered (Green et al., 2013). Trends in the medical community and patient population will challenge the healthcare delivery system. Green et al. (2013) found healthcare leaders are well aware of the crisis and the implications to the system. This subsection included the forecasted shortage, reasons for the shortage, and actions listed to contest the shortage.

Overview of Mobile Technology in Healthcare

Researchers advanced the thinking around technology by delivering evidence-based outcomes to support and validate technological effectiveness (Berkhof, van den Berg, Uil, & Kerstjens, 2015). Wootton et al. (2012) described the priorities against the strategies for implementation. Kukafka, Allegrante, Khan, Bigger, and Johnson (2013)

reviewed the literature to understand technology implementation strategies and compared these strategies to other industries. TM researchers explored the costs of technology, change management, and productivity maintenance. The dimensions mentioned are important to the day-to-day operations of mobile technology. This subsection includes an overview of mobile technology in healthcare to describe technological priorities, financial incentives, and inhibitions. The section contains a description of value with advancing technologies, various forms of technology, and applications of the technology by healthcare providers.

Digital technologies may bridge the gap between toward addressing mental and physical healthcare needs (Naslund et al., 2017). Primary care officials evaluate important aspects of their business model to explore and understand future deployment objectives of information and communication technologies. Vaughn et al. (2015) contended that patient TM advantages are reduced travel and greater patient convenience, but questions continue about equivalence to face-to-face visits. From EHRs to mobile technologies to robotic surgeries, research exists about the adoption of mobile technologies within delivery systems (Akhter Shareef, Kumar, & Kumar, 2014). Compared to other industries, researchers agreed healthcare is on the lower end of adoption (Ajami & Bagheri-Tadi, 2013).

TM researchers discovered misaligned incentives between patients and providers, cross-hospital credentialing, integration into established workflows, usability of technology and lack of physician buy-in are reasons as barriers to technology (Uscher-Pines & Kahn, 2014). The important characteristics mentioned form the landscape for

apprehensive and scientifically skeptical adoption of any new method. The worldwide web deployment has enabled a more connected and educated healthcare delivery system (Jones et al., 2015). In many healthcare specialties, researchers have identified enhanced patient monitoring, engagement, and access as primary benefits for introducing advances in technology (Crowley et al., 2013).

When researchers attempted to validate cost-saving measures, some researchers experienced productivity loss after robust investment in the infrastructure (Jones et al., 2015). TM researchers supported productivity and cost savings experienced with mobile technology used with chronic obstructive pulmonary disease (COPD) patients (Berkhof et al., 2015). The literature has revealed a wide range of support for the benefits of technology. For mobile health, researchers encouraged investigating the plethora of technological innovations, testing the features and advantages, and employing advantages of these fundamentals where applicable (Frank et al., 2015). The dysfunctional and fragmented system often precludes the healthcare systems from indoctrinating new ideas (Hwang & Christensen, 2009).

The literature has denoted large and small hospitals, solo and multiphysician groups, and managed care organizations engaged in mobile technologies. Technological opportunities influence healthcare consumer access, patient care, patient experiences, financial results, documentation, archive and retrieval, and academic research (Akhter Shareef et al., 2014). Entities external and internal to the healthcare industry recognized the importance of incorporating technology to improve efficiencies, reduce disparities, and transfer best practices. Technology affords healthcare systems the opportunity to

provide accessible disease-state knowledge, product and service knowledge, and social media platforms.

Governmental regulatory initiatives targeting advancing technology must resolve fundamental healthcare issues such as connectivity, prescription error, healthcare disparity, cost containment, and patient access (Beck et al., 2014). Health system administrators are waging strategic campaigns and task forces to incorporate innovation into the workflow without disrupting the incremental business success, correcting for physician shortages, and challenging the costs associated with doing business. Information technology has become affordable, reliable, accessible, and versatile. The advancements of technology continue to unfold the evolution of TM.

Yellowlees, Holloway, and Parish (2012) noted the evolution of TM and pitfalls related to patient privacy issues, ethical and legal implications, and healthcare insurance companies. Authentication, patient well-being, and licensing and credentialing barriers have challenged TM from its inception in 1905 (Bashshur et al., 2013). Taylor et al. (2015) noted little is known about service improvements that help embed TM into routine practice.

Healthcare researchers have continued to press against the resistance, refine implementation standards, and discover appropriate deployments for leveraging TM applications (Wakefield et al., 2014). Disciplines within healthcare are recruiting and mobilizing TM champions (Zanaboni & Wootton, 2012) to facilitate the advancement of this disrupting technology. Gilman and Stensland (2013) noted that TM presents a disruptive change to business as usual, and physicians may not be inclined to adjust their

routine to accommodate TM. Healthcare providers must commit to the change as noted in the literature. Successful TM programs emerged with forward thinking and ideas around improving the care of the healthcare consumer.

Researchers identified teleradiology and telestroke as areas of success, but many of the projects discussed in the literature fail to survive after the initially funded research phases out (Kulcsar, Gilchrist, & George, 2014; Zanaboni & Wootton, 2012). TM researchers explored examples of healthcare research conducted in multiple acute and chronic diseases, such as COPD, congestive heart failure (CHF), diabetes, and dentistry (e.g., Berkhof et al., 2015). The literature has scrutinized TM from a clinical approach and not a healthcare consumer-centric perspective. The intent was to focus on understanding the application of TM and the delivery of healthcare from a functional versus collaborative perspective.

Researchers described how TM positively influences the workflow processes in varying healthcare centers of excellence such as cardiology, chronic pain, home care, and depression (Javed, Farrugia, Colefax, & Schindhelm, 2016; Tan et al., 2013). Researchers did not conduct adaptive type studies reviewing the applicability from one functional area to another functional area. Research in many functional areas remained pure in given areas of study instead of cross-pollinating another functional area (Tan et al., 2013).

Most researchers have received grants, and the grant guidelines were specific to the subject versus providing a comprehensive evaluation of TM (Alanee et al., 2014; Velianoff, 2014). Recipient researchers reviewed how TM could benefit and alleviate the

disadvantages of the rural community compared to the urban setting (Alanee et al., 2014; Bashshur, Shannon, Smith, et al., 2014). The efforts mitigating this drop-in healthcare deployment, compared to urban environments, is important and urgent (Wesson & Kupperschmidt, 2013).

Four Strategies for Technology in Healthcare

Technology is providing tremendous value to the healthcare delivery system from behavioral health needs to primary care. Researchers should measure the value proposition of technology based on how these advances reduced overhead costs, provided greater efficiencies, and enabled system connections (Jones et al., 2015). The four strategies administrators employ to technology are (a) a part of the solution for healthcare inequalities; (b) a source of information for decision making; (c) a deployable solution to rural and austere environments; and (d) a more expeditious approach to multitasking, communicating, and archiving (Emerson et al., 2015; Rajan et al., 2013).

In respect to ethnicity in the United States, researchers contended disparities such as patient access and access to specialists have intensified and challenged the healthcare system to meet patient needs (Beck et al., 2014). The use of TM is a requirement for intensive intervention to mediate the adverse effects of healthcare disparities. As a part of this intensive intervention strategy, researchers considered TM a strong rationale at the top of the solutions list to support reducing disparities in the care of acute myocardial infarctions (Mehta et al., 2014).

Technology is appropriate as a medium for streamlining provider workloads (Harvey, 2016) and establishing a comprehensive connection between healthcare delivery

mechanisms. Using technology, clinicians can move large quantities of specialized knowledge, heightening the quality and intensity of medicinal experiences regardless of socioeconomic boundaries. Connectivity permitted an inclusive compendium of information necessary for decision makers in pursuit of meeting corporate objectives.

Technologies advance the engagement and deployment too difficult to reach patients in disadvantaged communities (Oliveira, Bayer, Gonçalves, & Barlow, 2014). The advancement in technologies facilitates an information highway for connecting medical services and establishing physician-to-patient communications between distant locations and primary care facilities. Healthcare technology researchers stated mobile technologies, including iPADs, smartphones, and tablets, offer clinicians and support staff the opportunity to leverage remote access for mutual benefits between the healthcare delivery system and consumer (Mortazavi et al., 2015). Shah, Morris, et al. (2013) favorably discussed high-intensity TM services for acute illnesses are feasible and can provide definitive care without requiring the emergency resources.

Healthcare technologies, such as mobile devices, smartphones, wearable technology, and remote sensors, may offer new ways to bridge the significant gap addressing mental and physical health needs for patients (Naslund et al., 2017). Moving to more automated systems will affect treatment outcomes and create sustainable advantages to manual production. The rapid pace of technological evolution affects transformative processes such as executive decision making, multitasking, and communicating within the healthcare delivery systems (Velianoff, 2014).

The strategies set the foundational description of technology in healthcare. From supply chain to prescription management, healthcare researchers found technology influencing many dimensions of the healthcare delivery system (Naslund et al., 2017; Velianoff, 2014). EHRs, personal digital assistants, diagnostic tools, and m-health devices are enablers for delivering healthcare to the consumer, but effectiveness is only through the will and skill of dedicated professionals addressing health problems (Frank et al., 2015).

TM Researchers identified and supported the strategies across specialties. In the field of cardiology, Feltner et al. (2014) used technology to reduce all-cause readmission and mortality in patients with severe heart failure and a mean age of 70 years. Within the field of cardiology, Javed et al. (2016) used a home monitoring system for early warning of acute decompensation in patients with chronic stable heart failure.

The healthcare industry is an evolutionary continuum of technology (Dicianno et al., 2015). From evaluating technology for usefulness to integrating technology to optimizing healthcare, primary care administrators face costly challenges and investments. A variability of attitudes exists in healthcare administrators and physicians toward technology, and limited research exists on how well healthcare leaders embrace technologies to create transformative change (J. Li, Westbrook, Callen, & Georgiou, 2012).

Technological Forerunners of TM

Forerunners of real-time video conferencing connectivity were the telegraph, telephone, radio, two-way television, email, robotics, and EHRs. More platforms in

healthcare are moving from analog to digital from television monitors to voice-over Internet protocols. Advancing and changing to new technology platforms is an expensive venture and challenges the operating margins of healthcare systems (Meyers et al., 2012).

When reviewing the chronological order of assimilation, researchers intended to record continual improvement in the healthcare system. Researchers searched for intelligent ways to exercise their healing skills and knowledge. Researchers understood how accessibility to healthcare works in the care process (Lindberg, Nilsson, Zotterman, Söderberg, & Skär, 2013). Researchers employed ideas and concepts that diminished times, perfected techniques, and drove consistencies to create replicable experiences.

Van Velsen, Beaujean, and Van Gemert-Pijnen (2013) agreed the technology forerunners triggered a drive for higher levels of patient outcomes and experiences. The researchers also discussed integration, financial support, and short- and long-term productivity gains and losses as markers for improvement. The evidence supported the pursuit of understanding the barriers and facilitators to enhance the use of information technology to produce outcomes (Kukafka et al., 2013). The pursuit of understanding also provided a research alternative for additional solutions to improve the circumstances of patients with various forms of diseases.

The Influence of TM

Different points of view noted by researchers address the results and effectiveness of TM in diabetic patients (Crowley et al., 2013). Crowley et al. (2013) found TM accessible for patients and well suited for rapid implementation and broad dissemination. Favorable outcomes of TM include remote diagnosis and treatment, facilitating care of

at-risk patients, connecting presenting physicians to specialists, and monitoring treatment diagnosis and progress (Bashshur, Shannon, Krupinski, et al., 2013). When addressing the effectiveness of TM, Bashshur, Shannon, Krupinski, et al. (2013) remained evidence-based in their deliberation about the effectiveness of TM to warrant institutional and governmental investment. This section includes a synthesis of the literature focused on TM influence and discusses specific ways in which TM has affected the day-to-day practice of healthcare.

Many peer-reviewed studies' outcomes note the beneficial aspects of TM in treating heart failure, obesity, psychiatry issues, and other disease states (Bashshur, Shannon, Smith, et al., 2014; Feltner et al., 2014; Lipana, Bindal, Nettiksimmons, & Shaikh, 2013). In relation to patients with CHF, TM resulted in a decrease of emergency room visits (Smith, 2013). The evidence confirmed cost-saving benefits, greater efficiencies, and improved care delivery. With respect to diabetic patients, Wakefield et al. (2014) monitored the blood sugar levels and provided educational assistance to patients in rural areas. The effort improved the monitoring of patients suffering with diabetes. TM technology increased the number of patient contacts and provided greater education to these obese patients.

Behavioral health researchers also reviewed multiple studies producing evidence about the nature of TM in psychiatry. From posttraumatic stress syndrome to mood disorders, Morland et al. (2013) evaluated connectivity, satisfaction, and care delivery and established that TM is a cost-reducing mode of operation for serving veterans with behavioral health issues relative to face-to-face visits.

Liman et al. (2012) were instrumental in discovering alternatives for transportation, examination, and education of healthcare patients. Researchers provided prototypes for transporting healthcare tools and monitoring devices to rural and austere environments. Behavioral health researchers also conducted TM studies concerning the transportation of top clinical specialists to underserved areas to treat disadvantaged and at risks patients (Myers & Lieberman, 2013). Adding to transportation and examination, experts studied the employment of TM for diagnostic purposes to pre-hospital stroke management and intervention (Liman et al., 2012). The following paragraphs address the influence of TM on the healthcare delivery system.

TM is an obvious solution for rural and austere environments (Meyers et al., 2012). Researchers noted successful TM programs require collaboration between the TM system, the healthcare system, and local healing practices. Researchers provided an instructive view of how combining efforts with all three forms of healing enrich the results and outcomes received. Rebecca et al. (2012) provided evidence of the benefits to using TM in rural and austere environments throughout the world.

Smith (2013) examined the benefits of TM in hospitalized, heart failure patients. Feltner et al. (2014) identified one of the public health issues as CHF patients' frequent readmission to the hospital within 30 days. Researchers used randomized approaches to understand the effects and enhancement of TM monitoring devices for the overall patient experience. Investigators noted these monitoring devices afforded the ability of a TM intervention to reduce hospital readmission rates of post-acute myocardial infarction patients (Ben-Assa et al., 2014). The example presented exhibits TM benefits healthcare

consumers, representing the impact clinicians have through intervening with telemonitoring equipment.

Pekmezaris, Pecinka, Lesser, Swiderski, and Younker (2012) emulated positive outcomes and supported the efficacy of TM similar to live nursing visits in the management of CHF patients. Smith (2013) and Feltner et al. (2014) worked with heart failure patients to measure the influence of telehealth on the most frequently hospitalized diagnosis, CHF, among patients age 65 and over. Using TM, clinicians reduced the number of hospital days. Pekmezaris et al. conducted two studies at the same time—a randomized study and a matched cohort study. Pekmezaris et al. reported that patient care did not change between the groups regardless of what outcomes analyzed. The exercise proves TM broadens the hospital's ability to interact and monitor patients from a great distance.

TM researchers did not limit investigation to one disease state like hypertension, diabetes, or heart failure. These TM researchers investigated various diseases and settings to understand the full magnitude of the TM experience and the implications of intervention. Researchers provided clear evidence for TM's impact in healthcare delivery highlighting the versatility of TM in disadvantage patient types, disease states, and austere environments (Rebecca et al., 2012).

Uses of TM Within Healthcare

Czaja (2016) noted that existing and emerging technologies play a vast role in facilitating the care needs of older patients and their caregivers. TM researchers included many perspectives to understand the breadth and depth of benefits to the healthcare

delivery system. Czaja evaluated smart phone technology, pad devices, laptops, and stationary video cart systems to engage patients in appointments. Technology enables people the connectivity between patients and primary care providers. The TM uses theme includes applications and deployments found in the healthcare system.

The investigation of TM uses explored a number of healthcare interventions in rural geographies and explored the differences between rural and urban. Investigators also provided insights to understanding the strategies to reduce emergency department visits by older adults living in senior living communities (Shah, Gillespie, et al., 2013). Using video technologies, smartphones, and Android devices, TM researchers tested the benefits of each capability (Mortazavi et al., 2015). Every device targeted specific business inefficiencies to create better consumer experiences, deliver improved outcomes, and reduce cost associated with treatments.

Different healthcare specialties experimented with TM by injecting the technology into various treatment algorithms. TM researchers performed investigations in rheumatology, dermatology, cardiology, endocrinology, nephrology, hematology, neurology, internal medicine, obstetrics, and primary care (Keely, Liddy, & Afkham, 2013). Investigations provided intensive interventions to connect consumers to providers, and the conclusions proved to establish the scientific need associated with diagnosis and treatment (Crowley et al., 2013). Researchers did not address the business acumen required for TM business models.

TM researchers conducted investigations in nursing homes, home care units, hospitals, austere environments, and prisons. Researchers further identified how TM

enabled better response rates for handling distance healthcare in remote locations (Chakraborty, Gupta, Ghosh, Das, & Chakraborty, 2016). These countries include Malawi, United States, Amazon, Australia, India, China, Brazil, Switzerland, and Antarctica. Although investigations included many perspectives, researchers did not show ambition for understanding how patients could help accelerate the adoption of TM (Vaughn et al., 2015).

In telepsychiatry, researchers worked to establish basic protocols for employment of video conferencing for behavioral, mental health encounters. Examinations in telepsychiatry were largely descriptive, and small pilot study researchers determined more standard care models needed exploration. Telepsychiatry not only assisted psychiatrists with translation within local communities, but telepsychiatry also provided a means for delivering healthcare across geographic boundaries (Yellowlees, Odor, et al., 2013). Yellowlees, Odor, et al. (2013) used translation as a means for deploying telepsychiatry across national boundaries to drive engaging dialogues with Spanish-speaking patients.

In neurology, Emerson et al. (2015) worked on incorporating TM into the emergency room decision-making process to facilitate the application of thrombolysis in acute stroke patients. Emerson et al. used video interaction to determine the overall efficacy of injecting a neurologist on call into the decision-making process for urgent-care stroke patients. Emerson et al. found favorable results, which led to the development of best practice protocols for the treatment of stroke patients in the emergency room.

In audiology, Dharmar et al. (2016) measured the influence of TM; they surveyed patients, caregivers, and audiologists. Caregivers scored the importance of TM to their families as extremely important on a 7-point Likert scale (Dharmar et al., 2016). A majority of caregivers (90%) noted that they were comfortable discussing hearing status over TM; their satisfaction with TM was a 7.0 on a 7-point Likert scale (Dharmar et al., 2016). Caregivers noted audiologists scored the visual image and audio quality as a 5.9 and 6.7, respectively (Dharmar et al., 2016).

In radiology, researchers reviewed the asynchronous TM store and forward feature to understand the benefits of storing images and transferring those images to distant geographic locations (George et al., 2013). Radiologists described the impact of this teleradiology experience as time saving and cost effective (Rebecca et al., 2012; Zanaboni & Wootton, 2012). Researchers noted the difficulty in ascertaining the true costs associated with TM and the ability to pinpoint the savings.

In the cardiology-focused research reviewed, cardiologists were generally positive about the experience of using TM to benefit cardiac patients in their treatment strategies (Jones et al., 2015). TM researchers noted that cardiology researchers used home monitoring to reduce the rates of hospitalization and emergency room visits by patients (Jones et al., 2015). Cardiology TM researchers investigated the use of telemonitoring devices to track and assess patients suffering from high cholesterol and frequent visits to the hospital's emergency room (Lei et al., 2017). Using TM interventions, clinicians observed a positive reduction in lipid count. Clinicians within heart failure research studies improved CHF patient functional status by using telemonitoring (Giordano et al.,

2013). In the rural-focused research studies, TM provided an avenue for closing the gap of specialists in the rural communities when treating women veterans suffering from chronic pain and depression (Tan et al., 2013).

TM researchers focused on closing the distribution gap of specialists in rural communities. From telemonitoring to teleconsultation to telestroke, clinicians and researchers explored how to leverage TM in healthcare delivery. Alanee et al. (2014) noted TM benefits in rural communities using value chain analysis to examine cost drivers. The researchers invested time and effort working through the business practices of TM utilizing telemonitoring and telerehabilitation.

Pekmezaris et al. (2012) illustrated an overview of TM for the use of telemonitoring Medicare patients treated for CHF receiving home care. Pekmezaris et al. provided evidence for using TM to monitor patients with chronic care sicknesses and indicated that TM is not significantly different from live nursing care. A group of seniors, above the age of 65, represents 78% of the healthcare dollars expended on medical costs in the United States (Pekmezaris et al., 2012). The use of TM offered a unique opportunity to provide argument for using TM monitoring and pharmacist case management when intervening with hypertensive patients under chronic care (Margolis et al., 2013).

Mortazavi et al. (2015) evaluated a multisensor system designed to monitor patients and send reports to healthcare officials. The ability to monitor exhibited an important ingredient for delivering access to healthcare in rural locations. The researchers studied the influence on real-world physiology and daily life. Healthcare

consumers carried equipment with wearable sensors connected to smartphone devices. Sensors-enabled TM researchers captured a global positioning system to track data retrieval from specific locations (Mortazavi et al., 2015). All the healthcare consumers used a recall diary to help track their activities and match them to the data supplied by the remote sensors. The result provided additional evidence supporting the favorability of TM for routine healthcare treatments using remote monitoring (Mortazavi et al., 2015).

The review of the uses of TM explores the cross-cultural versatility of the TM tool and generates thought for higher rates of user satisfaction and improved clinical outcomes (Banbury et al., 2014). From the primary care professional perspective, the review of the uses of TM offers opportunities to augment business model strategies to grow physician access and drive revenue potential. The versatility of the tool and potential for greater access and revenue provide justification for refining the approach to healthcare treatment protocols (O'Shea et al., 2015).

Implementation of TM

Researchers from a variety of medical specialties noted the favorable benefits of implementing a system in multiple disease areas to include primary care, neurology, psychiatry, cardiology, dermatology, and more (Bashiri, Greenfield, & Oliveto, 2016; Zanaboni & Wootton, 2012). Discussions highlight the effectiveness of the implementation processes undertaken by clinicians within the research. Medical specialists highlighted the implementation barriers and facilitators existing for research programs and effective implementation steps for future programs (Uscher-Pines & Kahn,

2014). The implementation theme explores how TM implementation influences the healthcare industry.

The aging population will continue to place a significant burden on the healthcare system (Margolis et al., 2013). TM implementation strategies uncovered mechanisms to meet the need of the healthcare industry. Evidence directed to chronic conditions and treatment algorithms associated with geriatric patients is a driver for TM implementation. Chronic conditions, unlike acute abnormalities, require a comprehensive treatment plan encompassing lifestyle modifications, disease management, and therapy maintenance (Margolis et al., 2013). To address the needs of an aging population, clinicians need to develop and implement strategies toward comprehensive engagement versus isolation strategies seen in acute sicknesses. Joseph, West, Shickle, Keen, and Clamp (2011) described integrative business models for addressing how TM implementation occurs at the primary care level.

Healthcare administrators instituted the use of other technologies to improve the quality of healthcare. Multiple countries addressed the need for a TM implementation plan similar to the adoption of other technologies within the healthcare industry (Joseph et al., 2011). Joseph et al. (2011) developed checklists using the data gathered from telehealth deployment sites to guide the future employment of telehealth in other areas. A telehealth checklist could mislead and not represent the needs of a given system (Joseph et al., 2011).

Implementation plans are good for TM programs (Wakefield et al., 2014). The plans must succeed in an organizational readiness assessment. Researchers noted

understanding important stakeholders and business factors associated with TM implementation is necessary for organization acceptance of the concept (Moeckli, Cram, Cunningham, & Reisinger, 2013). Zapka et al. (2013) described readiness as the receptivity and preparedness to engage in a different healthcare vehicle to accomplish positive outcomes in healthcare. Using validated surveys to gauge senior business leaders, Sabri and Sabri-Matanagh (2012) identified that planning of organization-wide communications is critical to implementation. The areas addressed provide substance for creating the ownership and leadership engagement necessary to champion new technology initiatives (Yeager et al., 2014).

The implementation and proliferation of TM have yielded improved healthcare delivery in some areas (Shah, Morris, et al., 2013). The insights alone have not been strong enough to change the trajectory of TM adoption, and TM is gradually becoming a technological and clinical reality (Martínez-Alcalá, Muñoz, & Monguet-Fierro, 2013).

The central issue concerning the adoption of TM includes multiple dimensions internal and external to the healthcare community. Bramstedt et al. (2014) used medical students and academic officials to pilot a TM program at the university level. Bramstedt et al.'s efforts reflect the challenge associated with educating the physician community about TM and why curriculum adaptation is necessary for incorporating TM into the healthcare delivery system. Bramstedt et al. proved medical students and academic officials appreciate the value proposition of TM and gained support for incorporating TM into the curriculum. Although the research was an exposure study, TM clinicians

identified patient and physician communication as the cornerstone for healthcare interactions.

Research reviewed for the study highlighted the engagement and reaction of patients to TM in addition to various implementation strategies. Lipana et al. (2013) suggested that TM is an equivalent alternative to conventional, face-to-face appointments. Bove et al. (2013) observed a high rate of patient engagement with hypertensive patients who received a follow-up consultation with TM. Lipana et al. illustrated that TM is a feasible strategy to increase patient's access to quality care. Activating patients as proponents may affect the adoption rate of TM.

Moeckli et al. (2013) formulated conclusions by conducting literature reviews on a number of conference papers. They used data to produce a qualitative list of influencers of TM that include technology, staff acceptance, financing, organization, policy, and legislation. They found the list of influencers as important line items for managing the pre-implementation and postimplementation phases of deployment.

TM researchers encountered issues around making TM work, developing standard operating procedures, and identifying the critical elements for the healthcare delivery system (Wootton et al., 2012; Zanaboni & Lettieri, 2011). Healthcare providers in the reviewed articles assessed evidence-based approaches for incorporating TM into the healthcare delivery system. These evidence-based approaches provided knowledge and guidance for directing project managers on implementation strategies.

Benefits of TM for Healthcare

Researchers used a plethora of ways to measure the beneficial characteristics of TM. From outcomes to nonclinical benefits, the benefits of TM will challenge the conventional wisdom of senior executives. The benefit discussion includes the influence of TM on care management for high-cost beneficiaries of Medicare and Medicaid services, family member participation, hospital implementation and actions, caregivers and patient information (Goran, 2012). Neufeld, Doarn, and Aly (2015) noted that Medicare is a key influencer of TM implementation since initiating reimbursement coverage in the late 1990s.

Van Gurp, Van Selm, Van Leeuwen, and Hasselaar (2013) discussed how TM transforms caregiving cultures and demands redefining roles and responsibilities for caregivers, friends, and family members of a patient with chronic ailments. Van Gurp et al. conducted a study to provide specialized care to individuals who desire to remain at home during the final stages of their illness. TM established patients at the center of their care, positioned physician–patient visits at the patient's home, and enabled physicians to maintain surveillance of patients from a distance (Van Gurp et al., 2013). The examples of benefits may affect the sustainability of TM as an alternative to conventional deployment of resources.

TM researchers provided evidence to support the care coordination model for success in various settings and stated disease initiatives (Goran, 2012). The models represent a wide array of specialties to include intensive care units, home care deployments, and dermatological operations. Opportunities for advanced treatment

outcomes, hospital length of stay reductions of 25%, hospital admissions reductions of 19%, and other beneficial results illustrate the benefits of TM (Dinesen et al., 2016).

Goran (2012) posited 15 benefits in the employment of TM within the intensive care unit. The finding has many implications when discussing the view from bedside to camera-side. From providing frequent visual assessment of agitated or restless patients to monitoring compliance with quality measures, Goran provided a comprehensive list of opportunities to empower the intensive care unit team. Moeckli et al. (2013) recommended that healthcare leaders should allocate time and resources for coordination, continuous needs assessment for TM, staff training, developing interpersonal relationships, and systems design and evaluation. O'Shea et al. (2015) commented that increased access and reduction in geographic obstacles to quality care help leaders acknowledge TM as a solution for the workforce shortage.

Transition

Weiner, Yeh, and Blumenthal (2013) noted that technology may influence response to workforce shortages by addressing potentially 12% of care delivery. The information above provided evidence for including TM as an augmentation strategy for delivering healthcare solutions. The opportunities for using TM as a core business strategy are too numerous to explore in the study, and the lack of focus by the industry may show the problem with adoption.

Section 1 included a background of the problem, problem statement, and purpose statement. This section also provided the nature of the study and a review the status of TM in healthcare. The thematic review included the utilization of TM in various

specialties throughout healthcare and a synthesis of the workforce shortage. In the article review, a segmented review into eight subsections existed to provide a robust analysis of the available data.

Section 2 includes the role of the researcher and describes the participants involved in the study. An in-depth analysis reflects the methodology, including the population and sampling strategy. A description of the data collection techniques includes a review of the survey instrument, data collection process, and coding methodology. The other part of Section 2 includes highlighting the efforts of the research to focus on reliability and validity of the study.

Section 3 includes an overview and the findings of the study. The analysis includes the findings applicable to professional practice and explores the implications for social change. The next portion of Section 3 includes recommended action steps, further study ideas, and reflections of the research study process. The last section of the study includes a summary of the results.

Section 2: The Project

A description of the project contains the parameters and purpose of the study with an explanation of the researcher's role. Identification of participants included the characteristics of the study group. The research methods discussion consists of a detailed explanation for using the selected methodology. Last, the study contains a discussion of data collection, analysis strategies, and processes for assuring the study's reliability and validity.

Purpose Statement

The purpose of this qualitative descriptive study was to determine factors primary care physician administrators consider in deciding to implement TM as a potential solution for the growing physician shortage. Primary care physician administrators participated in face-to-face interviews with me to gather data about the adoption or nonadoption of TM. I also reviewed company documents that pertain to workflow to demonstrate methodological triangulation. The intent of this study was to provide primary care physician administrators with strategies to enable them to facilitate the adoption of TM by physicians who serve as administrators of their practice group within Gwinnett County in Georgia.

The outcomes of the study may influence social change by providing an increased understanding of how TM can mitigate the workforce shortage in healthcare. The findings may help primary care administrators provide environmentally friendly strategies to practice medicine. TM implementation may provide relief from

environmental impacts such as emissions of carbon dioxide and other greenhouse gases (Holmner et al., 2014).

Role of the Researcher

My role as the principal investigator was to interview and observe subjects selected and to reconstruct events I have never experienced. Rubin and Rubin (2012) contended that the explored events differ from what the researcher has experienced. In this role, I was committed to conducting the research process in an ethical manner while maintaining a high degree of credibility. Tracy (2010) noted that researchers must maintain high standards of credibility as a marker of quality in qualitative research. I adhered to the ethical principles and guidelines for the protection of human participants in research established by the Belmont Report. The Belmont Report, created by the National Committee for the Protection of Human Subjects and Biomedical and Behavioral Research, provided standards for ethical practices in research involving human subjects (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

I utilized an interview protocol and 10 open-ended questions in an attempt to conduct research that would be relevant, timely, evocative or significant to the healthcare business, and interesting to the reader. Tracy noted that good qualitative research is relevant, timely, significant, interesting, or evocative. I was the cofounder and consultant for a small TM firm and deliberately worked to reduce the biases associated with working in the industry. Prior to designing the study, my healthcare knowledge included limited information on TM.

Participants

The primary participants worked as primary care physician administrators in Gwinnett County in Georgia. The primary selection process involved a purposeful sampling method for providing a multiperspective and participatory investigation (Moreno, Kota, Schoohs, & Whitehill, 2013). To engage additional participants, I used a snowballing technique to achieve the minimum number of participants. Snowballing is a referral chain system that works by using social networks to recommend potential participants (Patwardhan, Pandey, & Dhume, 2017). I selected primary care physician administrators from various online mechanisms, such as LinkedIn® and WebMD® directory portal. I used this selection process to identify and obtain contact information of the primary care physicians practicing in Gwinnett County, Georgia. Each selected participant had a minimum requirement of 1 year in a group practice with at least two or more members in Gwinnett County, Georgia. Content analysis is the most appropriate strategy for descriptive studies (Sandelowski, 2010). Therefore, I analyzed verbal data to summarize the informational content received during face-to-face interviews.

To access participants, I followed a four-step process. First, I used various online portals, such as LinkedIn® and WebMD® healthcare directory, to target primary care providers practicing in Gwinnett County, Georgia. Using LinkedIn inmail services, I sent inmails to primary care physician administrators to invite them to participate (see Appendix A). Second, I worked with the Academy of Family Practice Physicians in Georgia and chapters in the Gwinnett County, Georgia to issue an invitation to participate to membership. Third, I worked with the American Telemedicine Association to identify

primary care physician administrators who use TM. Fourth, I called each primary care office and spoke with the receptionist to schedule an appointment.

The Consent Form (see Appendix B) provided the voluntary nature, risks and benefits, and confidentiality information for the study. Participants provided a convenient interview time, and I followed the Interview Protocol (see Appendix C). Prior to each interview, I developed a working relationship by providing each participant with the study purpose and intent. For each interview, I asked 10 open-ended interview questions (see Appendix D), recorded each interview, and created a transcript to identify specific phrases and sentences. O'Malley, Gourevitch, Draper, Bond, and Tirodkar (2015) used a review of typed verbatim notes to determine their study patterns, themes, and insights practices emphasizing teamwork. I will maintain the confidentiality of participants by keeping all resultant data in secure, password-protected files for 5 years.

Research Method and Design

The exploration of the experiences, perspectives, and characteristics of primary care physician administrators included a qualitative, descriptive approach to investigate the everyday language of adopters and nonadopters of TM. I sought to determine what qualitative conclusions might result about how primary care physician administrators characterize the use of TM to alleviate the workforce shortage. Babbie (2013) noted humans seem predisposed to undertake the desire to determine their future circumstances by using causal and probabilistic reasoning. The rationale for selecting the qualitative method was to identify and explore the decision-making processes of primary care physician administrators who have and who have not adopted TM.

The design of the study enabled a description of TM adoption from the perspective of primary care physician administrators. Sargeant (2012) noted that data saturation occurs when additional interviews or focus groups are not sources of new concepts. Marshall, Cardon, Poddar, and Fontenot (2013) said data saturation entails bringing new participants continually into the study until a data set is complete, as indicated by data replication or redundancy. Boeije and Willis (2013) defined saturation as data adequacy, which occurs when no new information surfaces when gathering data.

For the current study, the sample size was 20 participants. After 13 interviews, participants in this study started repeating comments made by previous participants. I achieved data saturation at 13 participants, but I continued to meet the objectives of this study by interviewing the remaining participants. In this subsection, I provide an overview of the research method, explain the research design, and provide a detailed review of the three stages used to collect the qualitative data.

Research Method

For this study, I explored, using the descriptive qualitative method, characteristics of primary care physician administrators either utilizing or not utilizing TM in their business models. The conclusions derived are based on data collected and analyzed from in-depth interviews with purposively selected physicians. Jamshed et al. (2014) noted that exploration occurred during interviews, and the right questions allow unanticipated variables to emerge from study participants. Qualitative techniques help investigators to understand changes needed in process around organizational culture (Garcia & Gluesing, 2013). Senior healthcare administrators may establish a TM strategy to curtail the

growing workforce shortage by using the findings of this study. Exploring the disruptive nature of the technology and the adoption theory reveals what issues influence primary care physician administrators' decisions to utilize, or not utilize, TM.

Leedy and Ormrod (2013) noted the quantitative method is the most appropriate method for examining the trends and patterns. Quantitative methodology would include a snapshot of the data; however, this methodology would not necessarily pinpoint the rationale and perceptions of primary care providers about TM (Thomas & Magilvy, 2011). Quantitative methodology would not support the specificity of the central question of the research. The mixed study design could produce appropriate results; however, the time and resource constraints prevent the application of this method (Sandelowski, Leman, Knafi, & Crandell, 2013). The findings from this study could help healthcare administrators and future researchers identify and develop procedures and training necessary to close the workforce shortage through knowledgeable TM users.

Research Design

The selection criteria for the research design involved the need to gather candid feedback, the influence of lived experiences, and capability of short-term observations in order to draw conclusions. The qualitative descriptive study provided me with the opportunity to receive candid feedback from my participants (Sandelowski et al., 2013). I considered other designs like comparative, case study, grounded research, and ethnography; however, the designs required long-term observational periods (Merriam, 1998). In this study, I applied data collection techniques consistent with the qualitative methodology to explore what characteristics are meaningful for adopting, or not

adopting, TM (Sandelowski et al., 2013). The participants for the study consisted of primary care physician administrators who serve as practice administrators, who have adopted or not adopted TM within their practices in Gwinnett County, Georgia.

Population and Sampling

The population for this study consisted of 20 primary care physician administrators actively working in Gwinnett County, Georgia. The purposeful sampling process included qualification requirements for the needed knowledge and experience of the participants (Moreno et al., 2013). To supplement those found through purposeful sampling, I used snowballing technique to achieve the minimum number of participants. Snowballing is a referral chain system that works by using social networks to identify potential participants (Patwardhan et al., 2017). Participants provided names of other possible participants in primary care. Patton (2002) noted that combining multiple sampling strategies establishes a viable sample for the study.

For a qualitative study, Bernard (2013) noted that the appropriate size is 15 to 20 participants. Saturation is a process followed to ensure satisfactory and quality data collected support the study. O'Reilly and Parker (2012) explained that saturation occurs when responses to interview questions provide no new data, coding, or themes. Participant responses to 10 open-ended questions allowed me to monitor and achieve data saturation by recognizing redundant responses from participants. Boeije and Willis (2013) commented that researchers often stop data collection after detecting or resolving the most serious problems. O'Reilly and Parker noted there are several principles in evaluating saturation: (a) initial sample size, (b) interviews needed, (c) reliability analysis

conducted by multiple coders, and (d) ease of evaluation. My initial sample size was 20. I interviewed 20 primary care participants. I experienced data saturation interviewing Participant 13, but I continued to interview participants through Participant 20.

Farmer et al. (2014) noted that the primary care specialty is at a crossroads with the healthcare workforce shortage. Primary care physician administrators included nurse practitioners, medical doctors, and doctors of osteopathy working in internal medicine, general practice, or family medicine business models. The population did not include nurses, receptionists, laboratory technicians, or billing specialists. The reason for selecting the primary care specialty is that primary care represents the front line (Farmer et al., 2015; Hung, Gray, Martinez, Harrison, & Schmittdiel, 2015) care providers and include primary care physicians, nurse practitioners, physician assistants, and practice administrators. Hung et al. (2015) identified primary care providers as front-line care providers. The primary care physician administrators provide strategic direction and decision making for individual and group primary care practices.

Ethical Research

Walden University maintains high ethical standards to include an Institutional Review Board (IRB) approval prior to data gathering and analysis. The IRB approval number is 09-29-14-0311567. The minimum number of informants is 20 for a qualitative descriptive exploration conducted at Walden University. Each participant received, read, and signed a Consent Form. In the section, I include the main principles of ethical research and how the principles influenced the data collecting, analyzing, and archiving processes.

The current research included a responsible manner for exploring TM and the growing workforce shortage in primary care. I adhered to the five principles of ethical research developed because of the experiments at Auschwitz, Tuskegee syphilis study, and Willowbrook study (Wester, 2011). The five main principles of ethical research are (a) respect for person, (b) autonomy, (c) protection of disadvantaged populations, (d) justice, and (e) beneficence (Wester, 2011).

The respect for individuals extended to the data-gathering process. Every step of participant selection and data gathering considered informants as human beings and not a means to achieve conclusions. Respecting each person counts in assuring audiences review and analyze credible data and findings. I responsibly maintained a high degree of professionalism when interacting with participants.

Autonomy is people participating under their own recognizance. The interview recruitment process did not involve coercion as a technique. Participants did not receive any form of compensation or incentives for participating in this study. Participants responded voluntarily to each interview question. Participants received instructions to find a quiet place to set up the interview appointment based on personal experience.

Informants responding to the interview had a fair opportunity to express personal opinions and perceptions. Informants interested in withdrawing from this study process were instructed to submit an email requesting withdrawal sent to kevin.mckinnon@waldenu.edu. Once a withdrawal email was received, a reply receipt included acknowledgement. From an ethical perspective, participants included a

diversified group. Data collection consists of exploring and understanding how healthcare administrators will face the growing workforce shortage and TM.

I minimized risk to individual participants, achieved beneficence, and ensured informants experienced no harm. The principle of justice ensured equitable risk and benefit distribution throughout the informant population. Equitable distribution provided a method for respecting the rights of each participant and ensuring informants have their privacy, answer freely, and due process (Shivayogi, 2013).

I will secure and archive the data for 5 years. For the hard-copy documents, security protection involves lock-and-key access. Microsoft Excel® spreadsheets will remain available with the proper password assess. Destruction means will include document shredding of hard-copy materials and Microsoft Excel® database deletion through the trash icon and emptying trash steps.

Data Collection Instruments

Data collection in descriptive studies systematically uncovers the who, what, when, and where of events and experiences (Sandelowski, 2010). Rosenthal (2016) contended that a good way to provide an in-depth understanding of participants' experiences and perceptions in research is through interviews. Qualitative researchers should carefully listen to or observe the speech and actions of participants, and analysis should lead the researcher to discover core reasoning patterns to understand how participants communicate about the research question (Ortiz, Zimmerman, & Gilliam, 2015). For this study, the data collection process consisted of face-to-face interviews and document reviews with primary care physician administrators in Gwinnett County,

Georgia. I served as the primary data collection instrument and used an interview protocol to maintain consistency during each interview session. Droppa and Giunta (2015) stated that an interview protocol contributes to discovery and evaluation about the behavior of collaboratives. I used open-ended questions to collect responses from each participant. Sargeant (2012) noted that researchers must select participants who can inform the research questions and provide perspectives about the study. I also sought to use participants who could provide perspectives about the research questions.

For this qualitative study, I was the primary instrument. Erlingsson and Brysiewicz (2013) noted that the researcher is a part of the study and the research instrument. An in-depth list of open-ended questions is an appropriate instrument for gathering perspectives from participants (Bernard, 2013). The secondary instrument I used for this study was semistructured, face-to-face interviews. I used Apple's Guitar→ software to record in conjunction with taking notes on paper. I collected data through face-to-face interviews and document reviews.

The interview recruitment process solicited primary care physician administrators in Gwinnett County, Georgia. I provided participant physician administrators with an identification code to protect their confidentiality throughout the collection and analysis period. At the beginning of the interview, I restated the purpose of the research to engage each healthcare professional.

I used semistructured interviews during this study. In the interview, participants provided their name, position, and affiliation in Part I. Part II of the interview included the problem based on the theory of disruptive technologies. Part III incorporated the

diffusion of innovation theory constructs (a) voluntariness, (b) relative advantage, (c) compatibility, (d) image, (e) ease of use, (f) result demonstrability, (g) visibility, and (h) trialability (Wainwright & Waring, 2007). Using these constructs, I contextually tailored the innovation instrument used by Moore and Benbasat (1991) to create 10 open-ended interview questions (Lee et al., 2015). The instrument validated and used by Moore and Benbasat was designed to measure various perceptions that an individual may have regarding adopting information technology innovation. I received permission, from Dr. Benbasat, to adapt the instrument for my study. From not implementing the instrument exactly as validated, I obtained permission to modify and implement the survey, and Dr. Benbasat granted permission (see Appendix E). Leedy and Ormrod (2013) stated that reliability and validity are specific to each situation. Therefore, this instrument may not have been valid and reliable in this context. I mitigated this concern through methodological triangulation.

To enhance reliability and validity, I reviewed five strategies identified by Leedy and Ormrod (2013): (a) administer instrument in a consistent manner, (b) establish specific criteria for investigator's judgments, (c) consult literature for techniques effectively used by other researchers, (d) show the first draft to experienced colleagues to gain feedback, and (e) conduct a small pilot to try out an instrument. For my study process, I completed three of the five strategies. I consulted the literature for effective measurement techniques used by other researchers and showed the first draft of the questions to colleagues. Last, I administered data collection in a standardized way with

each participant following an interview protocol. With these strategies implemented, my intent was to enhance reliability and validity.

Selection included participants in the study from Gwinnett County, Georgia from online databases such as LinkedIn® and WebMD® primary care physician directories. For the purposes of the study, the participants participated in the face-to-face interview during one appointment and used their office environments as the setting. During the interview, I expected participants to reflect relevant experiences, describe inferences, formulate a response, and clarify or elaborate on their responses where needed.

The completed interview provided me with a set of data to explore common themes and factors. To achieve data saturation, I interviewed an ample amount of primary care physician administrators. After 13 interviews, participants in this study started repeating comments from previous participants. I achieved data saturation at 13 participants, but I continued to meet the objectives of this study by interviewing the remaining participants. O'Reilly and Parker (2012) determined that saturation occurs when responses to interview questions provide no new data, coding, or themes. A sample size of 20 participants, while using methodological triangulation, transcript review, and member check, facilitated obtaining saturation and enhanced the credibility of the study results. I conducted member checking to verify and extend interpretations by sharing interview analysis with participants and recording their feedback. Miles, Huberman, and Saldana (2014) noted that researchers feed studies back to participants as a way of providing member checks on the accuracy of descriptions, explanations, and interpretations.

Once the interview was completed, respondents concluded their participation in the study. The participants did not automatically receive a copy of the final study data. However, a copy of the data or study remains available for participants upon request to kevin.mckinnon@waldenu.edu (see Appendix F). The participants did not receive an honorarium for their participation. Section 3 contains the findings and recommendations stemming from the study.

Data Collection Technique

The overarching research question for this study follows: What influences primary care physician administrators' decision-making processes to implement or not implement TM as a solution for the workforce shortage? The main data collection techniques for qualitative research are individual interviews, focus groups, observations, and action research (Babbie, 2013). Data collection technique for this study included the who, what, and where of the events of experiences (Sandelowski, 2010). I concluded data collection when ongoing data analyses were rich enough to reveal the themes (Lin, Chaboyer, & Wallis, 2014) of what influences physician administrators' decision-making processes to implement or not implement TM.

I arrived early to each interview appointment to conduct a site visit for the interview. I worked with the receptionist and the office manager to set up audio recording software. During each interview, I followed the interview protocol. The data collected came from face-to-face interviews with primary care physician administrators. I reviewed blank workflow documents, which consisted of blank patient forms, blank HIPAA (i.e., Health Insurance Portability and Accountability Act of 1996) forms, and

blank EHR templates. The data collection window concluded within a 30-day period to meet the timelines of the study. For this study, I used Apple® recording software and Microsoft Word® to record and transcribe the interview data. I conducted member checking by allowing participants to review transcripts and validate the data recorded. I performed member checking to validate the findings by sharing interview analysis and interpretations with participants. Miles et al. (2014) commented that data agreement improves the quality of the data and the conclusions.

Documents benefit the research data, supporting the information collected during interviews. Documents enhance the construct validity of qualitative research findings (Yin, 2014). Rozzani, Mohamed, and Syed Yusuf (2016) supported the use of documents as a triangulation method to enhance credibility and reliability of the data. Rozzani et al. noted documents also support the statements made by study participants. As a researcher, I only collected documents from the business that pertained to workflow.

There are advantages and disadvantages to using techniques such as face-to-face interviews and document analysis for data collection. The advantages of collecting data through interviews are participants discuss what is important to them and investigators unearth insight (Boeije & Willis, 2013) and the context of the research subject (Babbie, 2013). The disadvantages of collecting data through interview are interviews are susceptible to bias, seem invasive, and may not restrict answers to the research topic (de Albuquerque, de Mendes Primo, & Pereira, 2015).

Data Organization Technique

At the conclusion of data collection, I used Microsoft Excel® to categorize the data to understand emerging insights and interpretations and coded the data as necessary to segment information into manageable clusters. Leedy and Ormrod (2013) noted that Microsoft Excel® helps the investigator sort and manipulate the data into a two-dimensional table. Boeije and Willis (2013) noted that large amounts of data overwhelm qualitative researchers, like quantitative researchers, and coding schemes to extend their human senses.

I also incorporated key conclusions from my literature review in categorizing the findings developed through this research. The data will remain protected in accordance with Walden University's IRB criteria governing storage and disposition of study material. I scanned all of the documents and discarded irrelevant data. I secured transcripts, documents, participant codes, and audio recordings using a password-protected Western Digital MyBook® external hard drive designed to assure the integrity of the data and confidentiality of participants. I am the only person who has exclusive access to all the data. The destruction of the information will occur after 5 years.

Data Analysis

The most important part of the research process is the data analysis section (Sandelowski, 2010). Cervantes, Minero, and Brito (2015) contended that researchers are the central agents in the analysis process. Analysis for this study included an in-depth review of the interview data. The foundation of this section involved two theories: (a) disruptive technology and (b) diffusion of innovations. The interview questions

incorporated the fundamental concepts of technology disruption and diffusion of innovation (Rogers, 2003). Participants provided answers to questions developed from the conceptual framework of the study. The data collected helped me to obtain a broad range of information about the events and experiences in the adoption of innovation by primary care physician administrators.

Qualitative researchers combine data from multiple sources such as observations, documentation, and one-on-one interviews to reach a holistic understanding of the research problem (Babbie, 2013). During data exploration, I sought to diagnose possible inaccuracies in the conclusions and results, plausible alternative interpretations, and validity threats through data triangulation. Face-to-face interviews and document reviews are examples of methodological triangulation (Patton, 2002). To determine the factors used by primary care physician administrators in the decision-making process, I conducted face-to-face interviews and reviewed workflow documents to collect data. Banbury et al. (2014) conducted semistructured interviews and used journal notes to detail the implementation of the Telehealth Literacy Project. I asked each participant interview questions to address the central research question.

Following are the 10 semistructured, interview questions for the study for primary care participants:

1. From your experience, how do you describe and define the meaning, structure, and essence of your technological experiences with TM as a primary care provider?
2. Considering your experiences, please describe your understanding and

interpretation of the available options for mitigating the growing shortage of primary care providers.

3. What criteria would you use in assessing the potential efficacy of TM when evaluating the available options for the workforce shortage?
4. From your experience, please describe how the conflict between workflows and technology advances within your office.
5. From your experience, please describe how your organization addresses the need for more efficiency within the business.
6. Please explain the factors in assessing the *complexities* (if any) that affect decisions within your healthcare business. Please explain how these complexity factors may affect the adoption of TM.
7. From a primary care perspective, how would you describe the implementation steps taken to ensure TM and other technologies meet the objective to improve healthcare?
8. Considering your experiences, please describe how TM may influence the internal and external reputation of the organization.
9. From your experience, please describe if you feel TM may negatively influence the internal and external reputation of the organization.
10. What implementation strategies and techniques have worked for your organization to ensure visibility and trialability of new technologies, such as TM or any others you may want to share?

To aggregate the data, I used Microsoft Excel® for data analysis. Meyer and Avery (2008) noted that Microsoft Excel® is an overlooked option for qualitative researchers. To organize the data, I entered all transcribed responses into a Microsoft Excel® spreadsheet. For this study, data organization involved organizing the information into categories to make the analysis easier. I involved a coding process that divided data into segments and then scrutinized data for commonalities that reflect themes. The initial set of codes involved the thematic categorization of the 10 open-ended, interview questions. After reviewing the data and as warranted, I expanded the list of codes to meet the flow of the data. Leedy and Ormrod (2013) noted the data collected are multifaceted and may simultaneously reflect several distinct meanings. The final determination of coding consisted of multiple reviews data collected, reading and rereading transcripts, notes, and TM literature.

Following the aggregation of the data, I used inductive analysis to categorize the findings from the data. Data collection and analysis benefit mutually when summarizing results into the everyday language of TM (Sandelowski, 2010). The data interpretation aligned findings under category headings to address the purpose of the study and the current gap in the literature. I supported my findings by reading and rereading new studies published since writing my proposal and incorporating new studies that contributed to the central research question.

Reliability and Validity

According to Johns and Miraglia (2015), reliability and validity establish confidence in research. Reliability is an important ingredient for assessing the

repeatability of the study's results and translation validity and builds confidence in the research (Johns & Miraglia, 2015). Validity is the ability to determine if the descriptions, explanations, and theorization accurately represent the intent of the research phenomenon (Campbell & Stanley, 1963). Thomas and Magilvy (2011) noted that when viewing data through the qualitative lenses trustworthiness is the goal, which includes (a) dependability, (b) credibility, (c) transferability, and (d) confirmability.

Reliability

Although quantitative researchers normally address reliability, I reflected to ensure the results are reliable for this qualitative study. Thomas and Magilvy (2011) noted four components of reliable and valid research: (a) credibility (which relates to internal validity), (b) transferability (which relates to external validity), (c) dependability (which relates to reliability), and (d) confirmability (which relates to objectivity). I completed several actions to address each component to ensure reliability of this study.

Dependability pertains to the assumption of replication, including audit trails (Hadi, 2016). I employed four strategies to enhance dependability. First, I conducted in-depth interviews with 20 primary care physician administrators. Second, I reviewed company documents. Third, I conducted a textual analysis to provide an educated interpretation that might be made of the text. Last, I included verbatim quotations in Section 3 to present the words of the participants from in-depth interviews.

I only used primary care physician administrators in the primary care sector of the healthcare industry within Gwinnett County in Georgia. Healthcare physician administrators demonstrated knowledge of internal and external influence to the industry.

The effort provided a filter for maintaining consistency among the responses received and future respondents to similar study efforts. I ruled out most threats to reliability before and after the research commences by asking myself the following questions (Leedy & Ormrod, 2013):

1. Did I use the same 10 semistructured questions for each participant?
2. Did I conduct the face-to-face interview in the same manner each time?
3. Did I influence the contents of the provider's descriptions in such a way that the descriptions do not reflect the provider's lived experiences?
4. Does the transcription convey the meaning of the interviews with each provider?

Participants' perceptions and documents comprised the evidence collected in this study.

Validity

Credibility means the confidence in the truth of the findings (Erlingsson & Brysiewicz, 2013). Some ways to achieve credibility are prolonged engagement, triangulation, peer scrutiny, and member checking (Erlingsson & Brysiewicz, 2013). Miles et al. (2014) noted that researchers feed studies back to participants to provide member checks on the accuracy of descriptions, explanations, and interpretations. For this study, I used triangulation and member checking in an attempt to build credibility. I provided each participant the opportunity to conduct a review of the transcript. I also reviewed blank EMRs, patient registration forms, and HIPAA forms. I also asked participants to validate data interpretation through member checking.

Qualitative researchers combine data from multiple sources such as documentation, face-to-face interviews, direct observations, and physical artifacts to reach a holistic understanding of the phenomenon. Patton (2002) suggested the use of triangulation to enhance the strength of a study by combining methods. Data triangulation converges information from various data sources to corroborate the findings of research (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). I analyzed company documents such as meeting notes, EHR, HIPAA forms, and blank registration forms coupled with responses to open-ended questions to reach a holistic understanding on if TM is a viable strategy to address the growing physician shortage.

Face-to-face interviews and documents are examples of methodological triangulation (Patton, 2002). During exploration of data collected, I sought to identify possible inaccuracies in the conclusions and results, plausible alternative interpretations, and validity threats through data triangulation. Van Wesel, Boeije, and Alisic (2015) noted the importance of equal treatment for each source of evidence in data collection. To determine factors primary care physician administrators use in the decision-making process, I conducted face-to-face interviews and noted documents to collect data and explore meanings within the study.

I described the data within the context of both the collection processes and the results from the interviews and documents. Transferability measures the applicability of the findings in other contexts (Erlingsson & Brysiewicz, 2013). Erlingsson and Brysiewicz (2013) stated that researchers provide thick descriptions to allow the reader to gain a proper understanding of the phenomenon under discussion.

From the federal government to local entities, legislative changes at various levels continually occur to facilitate the operational function of primary care (Bartels et al., 2015). These routine legislative occurrences threaten transferability. I identified this threat for future researchers to consider when assessing the study's transferability. The variance in legislation affected healthcare providers when discussing their answers to the interview questions, and I identified this threat when appropriate.

To achieve data saturation, I interviewed 20 primary care physician administrators. O'Reilly and Parker (2012) determined that saturation occurs when responses to interview questions provide no new data, coding, or themes. Data saturation occurred when I interviewed participant 13 in my study. A sample size of 20 participants with methodological triangulation, transcript review, and member checking facilitated obtaining saturation and enhanced the credibility of the study results. During the data collection period, study participants did not receive remuneration.

Transition and Summary

Section 2 included an expanded view of the research plan, which I executed in Section 3. Section 2 included a review of the purpose, role of the researcher, and participants. This expanded view consisted of a description of the method and design of the research. The section included the data collection techniques and sampling strategies used in this study. In Section 3, the results reflect the actual data collection, instrument development, validation, and analysis following Walden University IRB approval.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose for conducting this descriptive study was to determine factors primary care physician administrators consider in deciding to implement TM as a potential solution for the growing physician shortage.

In this study, I conducted semistructured, face-to-face interviews with 20 primary care physician administrators located in Gwinnett County, Georgia. I used a snowballing technique to achieve the minimum number of participants. Snowballing is a referral chain system that works by using social networks to recommend potential participants (Patwardhan, Pandey, & Dhume, 2017).

After conducting the initial interviews, I reviewed the recorded interview sessions, transcribed the interviews, documented my interpretations, and reviewed my interpretations with participants for accuracy. The process of member checking provided no new information. Three emerging themes morphed from the study: (a) TM awareness and education, (b) TM cost and reimbursement, and (c) TM utilization and implementation. Findings indicated that awareness and education of leaders toward TM require improvement, costs and reimbursement were variables for deciding to implement or not implement TM, and TM implementation requires knowing the appropriate use of TM.

Presentation of the Findings

In this section, I describe the data I collected to develop a comprehensive perspective of the study. I incorporated triangulation by using face-to-face interviews

and documentation received from participants. The greatest amount of data collected came from interviewing participants. The data collected addressed the overarching research question for this study: What influences primary care physician administrators' decision-making processes to implement or not implement TM as a solution for the workforce shortage?

I identified three themes by coding the collected data from the interviews and documentation. Three common themes emerged from the research: (a) TM awareness and education, (b) TM reimbursement and cost, (c) TM implementation and utilization. After uncovering the three themes, I analyzed findings in regards to those themes utilizing triangulation and member checking. I extended knowledge by reviewing the findings with office documentation.

Theme 1: TM Awareness and Education

The TM awareness and education theme relates to the central question by confirming that leaders consider awareness and education in their decision-making processes to implement or not implement TM as a solution for the workforce shortage. From interviewing primary care physician administrators, I discovered that the awareness and education of primary care leaders toward TM require improvement. Many primary care physician administrators lacked vigilance of the technologies, TM dimensions and applications, and advantages of TM for generating benefit (Keshvari, Haddadpoor, Taheri, & Nasri, 2015). Participant J commented, "TM is not going to change my behavior." Participant M commented, "not really sure how to use TM into my daily activities."

The lack of education and awareness was a key theme for addressing the central research question. Taylor et al. (2015) mentioned the importance of building awareness and sharing learning across multiple stakeholders about when and how to use TM. Participant A confirmed, "educating primary care administrators on the benefits of TM will provide key considerations for strategic planning and development." Participant C said, "TM is fairly new to me. I have a more hands-on approach. I like looking at the patient and diagnosing." Participant F commented, "I think one of the first steps is to let physicians see TM in action, see TM is a tool to help them be more effective and efficient."

Exploring the awareness and education level of primary care physician participants about TM was important to interpret the findings. During face-to-face interviews, participants expressed positive and negative perspectives of how TM could influence their primary care business. Thirty percent of participants had experience with using TM for patient encounters including secure, video conferencing. Participant K stated, "I don't have any personal experience with TM, however, I have read information about it." Participant J mentioned, "So [paused], my understanding of TM, it was originally geared towards rural areas for people who did not have access to the same level of healthcare as those in urban areas." Participant G responded, "I found it somewhat difficult from the primary care physician perspective to put TM into practice. It is not in our traditional workflow and productivity patterns."

Butcher (2015) found similar perspectives that some physicians are not comfortable with the concepts of TM and technology's influence on healthcare. Like all

technological advances, 75% of participants stated TM introduces disruption in workflows by requiring additional primary care physician education, re-engineering protocols to optimize staff time, and retraining ancillary staff to adhere to new TM procedures. Participant A mentioned, "productivity is an important factor for determining when to start a TM program. Education may help physicians understand how useful TM is" Participant D noted, "physicians need to be educated on how TM will change their operating behaviors before they will change."

TM Awareness. Defining what TM is and what TM is not are determinants to evaluating how TM may influence the central research question—whether primary care physician administrators will implement or not implement TM to mitigate the workforce shortage. Liu, Xiang, Lagor, Liu, and Sullivan (2016) noted that TM has been theoretically and empirically proven to be clinically beneficial. Participant G contradicted the benefits of TM and said, "my patients are not computer savvy enough to use TM." Kayyali, Hesso, Ejiko, and Gebara, (2017) noted TM is a solution for assisting in the diagnosing, monitoring, managing, and empowering patients with chronic and complex health and social needs. Peters, Blohm, and Leimeister (2015) noted little awareness exists regarding TM and how TM integration influences profitability and sustainability.

Participants A, C, and F indicated TM software and hardware costs, managed care reimbursement rates, and traditional workflow patterns were immediate concerns. Participant M suggested clinicians need to understand the state of TM. Participant A said, "awareness of where to use TM was just as important as how to use TM."

Participant G mentioned patient and provider awareness were critical for the success of TM. Kayyali et al. (2017) suggested patients preferred a simple and understandable solution that avoided technical jargons. Participant C noted that some patients are satisfied with their current approach to healthcare and suggested that primary care physician administrators must address patient satisfaction before deploying TM. Most participants mentioned awareness may influence how TM is used to mitigate the shortfall of healthcare providers (Participants A, B, C, F, G, H, J, K, L, M, O, P, Q, and T).

TM Education. TM education is related to the central research question by evaluating whether primary care physician administrators will implement or not implement TM to mitigate the workforce shortage. Adenuga, Iahad, and Miskon (2017) commented education would go a long way toward sustainability of TM. Participant E added physicians must understand the applicability of TM to deliver healthcare to the patients they serve. Participant E mentioned, "(TM) education must be approached from the physician side and the patient side in order to engage the practice of medicine." Patients may engage TM when exposed to TM ease of use, knowledge, and convenience. Participant A mentioned patients must have proper computers, camera equipment, or smartphone devices to feel empowered to facilitate a TM appointment. Participant I said that proper education may help business leaders explore innovative ways to embrace TM to improve outcomes and patient engagements. All participants said TM education may improve TM adoption for appropriate patients whether acute or chronic, urban or rural, and near or distant.

Participant A discussed the importance of educating stakeholders on the benefits of TM and TM implementation strategies. Participants E, F, and G mentioned primary care administrators need education on the advantages and disadvantages of TM. The use of TM should be an augmentation strategy to healthcare versus a complete healthcare vehicle for a consumer (Participants B, Q, & S). Participant F mentioned germs are all over the furniture, floor, and doorknobs, and TM helps primary care practices minimize the spread of bacteria and viruses. Participants G, O, and S stated their favorability to treat established patients periodically with TM and deferred TM treatment of new patients. Participant E replied, "I think TM is a very exciting idea. The fact that patients can call your office [phone rang], communicate with you via TN, and they don't necessary have to be at home." Participant F responded,

> So you can imagine, if they could see you and talk to you from their job and get their blood pressure medicine, be able to get cough medicine, be able to talk to you about a personal problem they may have, urinary tract infection, STD [sexually transmitted disease], the basic things, or how about an asthmatic whose having some difficulties.

Participant I said, "If we did it [TM] in the adjunct way that I described using it with patients to monitor weights and patients would be fine. Patients wouldn't mind as long as they don't have to pay anything extra for it."

Thirty-five percent of participants (A, B, C, I, Q, R, & T) agreed TM should not become the business model for delivering healthcare to consumers. Eighty-five percent of participants (A, C, D, F, G, H, I, J, K, L, M, N, P, Q, R, S, & T) emphasized

complexities and challenges with treating patients acutely and chronically. Chronic conditions, unlike acute abnormalities, require a treatment plan encompassing lifestyle changes, disease management, and therapeutic maintenance (Margolis et al., 2013). Participant responses coincided with TM researchers' responses distinguishing initial patient visits from established visits. Participants A and L suggested reserving TM use with established patients to ensure a good physician and patient familiarity. Hiratsuka, Delafield, Starks, Ambrose, and Mau (2013) noted that providers in their study emphasized conducting the initial diagnosis of current problems in person then follow up via TM visits. Participants agreed with Hiratsuka et al. and reserved TM for established patient encounters to ensure a care continuity, security, and safety. Participant G noted the importance of protecting a patient's personal information and how patient data come captured and stored on patient registration documents and EHR. Participant H explained there is a need to balance of how TM is employed to ensure protection for primary care physicians and consumers.

Only six out of the 20 participants (F, H, L, P, S, & T) stated that TM would negatively influence a primary care practice. Two of the 20 participants (B & C) stated improper utilization of TM could negatively contribute to a primary care office's reputation. Participant H said he was not in favor of TM and did not see much value over a telephone call with a patient. Unlike participants, TM researchers did not address positive or negative effects on the reputation of organizations implementing technological advances. Participant B stated, "It depends on the patient's experience. If we do this [TM] and we misdiagnose, that is not a big positive." Participant D replied, "Because if I

messed up anything in which I think I should have examined more carefully, and the patient ends up in the emergency room." Participant E noted, "When you reject a person's request to use technology or TM because you understand that this particular patient's request needs this encounter to be a face-to-face encounter." Participant F commented, "Medicine should never be a protocol because individuals are not protocol." Participants discussed how inappropriate use of TM could influence the reputation of the primary care organization. Participants were not sure how patients would adapt or react to or interact with using secure video conferencing for their healthcare needs.

Theme 2: TM Costs and Reimbursement

TM costs and reimbursement relate to the overarching research question by identifying obstacles that influence primary care physician administrators' decision-making processes to implement or not implement TM as a solution for the workforce shortage. Neufield and Doarn (2015) indicated leaders may benefit from further investigation of TM costs and reimbursement. Findings indicated that costs and reimbursement were important variables for deciding to implement or not implement TM in primary care. Participant A said, "physicians are hesitant about adopting TM because they do not understand the reimbursement costs." Participant M said, "some of the guidelines are changing, but it depends on the state in which you practice."

Costs relate to the central research question by evaluating whether primary care physician administrators will implement or not implement TM to mitigate the workforce shortage. E. A. Kessler, Sherman, and Becker (2016) noted cost is one of the factors driving TM interest to influence healthcare delivery. Participant N confirmed costs

incurred by patients and physicians such as computer equipment, connections, and webcam are important to making strategic decisions to implement TM. Participant E said TM costs cannot be prohibitive to the patient. As important, cost to the primary care physician administrator must align with budgetary expenditures.

Liu et al. (2016) noted the cost consequences of TM remain limited and could add costs over traditional face-to-face visits due to requirements for human and technical resources. Jang-Jaccard, Nepal, Celler, and Yan (2016) noted that TM is often too expensive to purchase and service, uses proprietary technologies that are incompatible, and requires skilled personnel to maintain. Participant E stated, "If there were one dollar for healthcare, how will I [provider] know what portion to spend on TM versus a face-to-face [visit]?" The depth of literature on costs is shallow, and more research may influence TM adoption rate by exposing key metrics such as return on investment, length of visit, and number of contacted patients. Seventy percent of participants (B, C, D, F, G, H, J, K, L, M, O, R, S, & T) mentioned cost benefit analyses of TM require improvement. Participant D stated, "Future reimbursements will be decreasing and complicate how we [primary care physician administrators] incorporate new services into our protocol."

Findings indicated that there is a gap between costs and reimbursement and quality of healthcare rendered. Findings further indicated that limitations on technological deployments by primary care physician administrators require improvement to obtain better patient outcomes and improved patient healthcare experiences. According to results from Medicare, a principal payer for healthcare services, TM-related expenditures in 2012 were significantly less than $0.09 per

Medicare enrollee, annually (Neufield & Doarn, 2015). However, participants in the current study remained uncomfortable with costs and reimbursement for TM-related services. Participant B answered,

> Since reimbursement is getting lower and lower and they [third-party payers and insurance companies] are wanting and needing more quality measures, but they do not want to pay for the time and expertise of primary care providers. We are supposed to be, not the pilot, but the navigators of all patients' needs.

Participant E stated, "Well, I think that the government or insurance industry should be more attentive to the primary care provider's needs since we are the gatekeepers of healthcare."

The findings of the study confirm the literature about cost and reimbursement for TM services. Uscher-Pines and Kahn (2014) noted health plan reimbursements, state licensure regulations, program funding, and capital requirements are reasons for nonparticipation with technology. Strategies to improve margins provide challenges to primary care leadership when incorporating advancing technology into given work streams. Eighty-five percent of study participants (A, B, C, D, F, G, H, I, J, K, L, M, N, P, Q, R, & T) affirmed either cost of TM equipment and software or insurance plan reimbursement as inhibitors for implementation. Participant A emphasized patient inclusion in the cost of equipment for the home, transportation, and patient migration.

Theme 3: TM Implementation and Utilization

A key theme to addressing the research question on what influences primary care administrators' decision-making processes to implement or not implement TM as a

solution for the workforce shortage was implementation and utilization. The findings in this study are similar to literature regarding TM as a strategy to mitigate the healthcare workforce shortage (Stingley & Schultz, 2014). Nouhi et al. (2012) cited geographic challenges confronting leaders when distinguishing between solutions such as increasing the number of medical school graduates to healthcare providers practicing in rural geographies. Molfenter (2015) posited that TM provides one solution to resource optimization, but implementation and utilization challenges require evidence-based strategies to overcome. One of the emergent themes in this study indicated that TM implementation and utilization may influence patient and physician support to sustain TM strategies for primary care physician administrators. Participant J said that TM implementation and utilization may enable business leaders to manage effectiveness, develop proficiencies, and optimize productivities.

TM implementation. TM implementation is related to the central research question by evaluating whether primary care physician administrators will implement or not implement TM to mitigate the workforce shortage. Barriers affecting implementation include limitations of TM equipment, technological and organizational obstacles to data sharing, and minimal staff awareness and engagement (Taylor et al., 2015). One of the challenges of technological advancement is whether primary care physician administrators will implement TM to alleviate the shortfall of physician workforce (Adenuga et al., 2017). Participant E said implementation should be managed by a champion or leader within the organization. Participant K mentioned the TM champion may lead organizational strategy and develop insights for building TM as a core

competency for the organization. Participants B and M suggested the TM business leader may develop rules and protocols and outline resources, budgets, and incentives for implementation. Adenuga et al. (2017) suggested incentives to influence the perception and behavior of primary care physician administrators toward TM as a dual responsibility or as an extra workload. All participants noted that TM implementation requires leaders, roadmaps, milestones, and project management to improve outcomes, reduced costs, and improve patient experiences. Participants concurred with previous research (Green et al., 2013) and stated a need to use multiple options to address the workforce shortage. Some participants (B, C, & I) expressed opposing viewpoints when they described the efficacy of TM. Participant H responded, "For my own patients, I don't know that video adds to what we have that would be a lot different from a phone call."

Participants A, G, and O stated TM provides an opportunity for primary care physicians to see patients without patients having to occupy space and utilize resources inside their medical office. Participants B, F, and G mentioned time allocation, resource optimization, and space utilization as considerations for primary care physician administrators when evaluating technological advances. Small disruptions in each consideration negatively influence workflow, productivity, and revenue generation (Participants B, F, & G).

Utilization. Utilization is related to the central research question by evaluating whether primary care physician administrators will implement or not implement TM to mitigate the workforce shortage. The findings revealed that the utilization of TM affects the change management of primary care physician administrators. TM optimization

starts with appropriate utilization for improving access, determining right patients, and sharing right procedures and practices. O'Gorman, Hogenbirk, and Warry (2016) noted that TM may improve patients' access to healthcare and services in rural and less developed areas by bridging the distance gap between healthcare providers and patients, but this does not guarantee utilization. Participant C mentioned the importance of gearing TM to the right care to the right patient at the right time. Participant O said the comfort level of physicians to utilize TM may improve when best practices are shared to minimize the negative perceptions and inappropriate utilizations of TM.

Jang-Jaccard et al. (2016) mentioned less expensive, compatible, and easy-to-use TM systems may improve utilization. Participants G and O commented the lack of equipment standardization as an obstacle for utilization. The study participants stated that concerns about the increasing workload on physicians. Participant D commented TM is one more thing physicians have to learn on top of their regular, day-to-day duties. Linderoth (2017) mentioned the importance of understanding how business leaders make sense of the technology to build a platform for utilization. The overall conclusion is the sense-making of key business leaders shapes the utilization of TM (Linderoth, 2017). Participant K said, "Give me ways to use it and I will evaluate it for my patients." All participants were not clear on the right procedures for TM utilization to help achieve improved outcomes, reduced costs, and improved patient experiences; this limited responses during face-to-face interviews (Participants F, H, L, P, & S).

The findings revealed a mixed perspective from participants to consider TM in both acute and chronic utilization or restrict TM to acute or chronic utilization. Forty-

five percent of participants (A, B, C, D, F, G, H, P, & R) provided specific examples of where TM utilization fits the business model of primary care when comparing acute and chronic conditions. Findings may support a notion of the challenges of treating chronic patients versus acute patient types (Rajan et al., 2013). Margolis et al. (2013) advanced that chronic conditions, unlike acute abnormalities, require a comprehensive treatment plan encompassing lifestyle modifications, disease management, and therapy maintenance. The results of the study confirmed the benefits of TM for specific conditions. Cheong, Lim, Jang, and Jhoo (2015) noted TM as a useful tool for patients suffering from chronic diseases and their caregivers. Reese et al. (2015) noted that TM is one option for families to access services in rural areas. Like TM researchers, 45% of participants (A, C, D, E, F, G, H, L, & T) listed multiple areas for TM utilization. Participants mentioned 10 areas in which to utilize TM: (a) upper respiratory infection (Participant G); (b) medication management for stable conditions (Participant H); (c) cardiovascular support for a rural or remote primary care physician (Participant K); (d) avoid unnecessary emergency room visits (Participant N); (e) evaluating data with patients (e.g., blood pressure, weight, sugar readings; Participant F); (f) wound care and assessing the efficacy of treatment (Participant F); (g) patients with superficial skin infections (Participant G); (h) assessing the response to physical therapy postop, especially with joint replacements; (i) psychiatric consults (Participant J); and (j) group disease state education sessions (Participant G).

Findings of this study confirm TM implementation requires knowing the appropriate utilization of TM. TM researchers from medical specialties noted positive

benefits of implementing a TM system in multiple disease areas. Kruk, Nigenda, and Knaul (2015) included examples in primary care, neurology, psychiatry, cardiology, dermatology, and more. Thirty percent of participants (B, F, N. O, R, & T) expressed concern about the improper application, which could lead to emergencies without the right level of care. All participants said understanding the application and familiarization to TM enables decision-making processes to meet organizational objectives. Primary care administrators review important aspects of their business model to explore and understand future deployment objectives of information and communication technologies.

Findings from this study did not confirm the literature regarding patient readiness for TM. Lipana et al. (2013) noted TM is an efficient alternative to conventional, face-to-face appointments. Twenty-five percent of participants discussed patients would not receive TM as a method for healthcare without education. Participant E said consumers do not have access to the right technology for healthcare delivered through TM. Contrary to Participant E, Bove et al. (2013) pointed toward a high rate of engagement with patients who received a follow-up consultation with TM.

My analyses found productivity and workflow challenges require improvement to influence utilization and implementation. A large group (75%) of participants (B, D, F, G, H, K, L, M, N, O, P, Q, R, S, & T) wanted to address workflow challenges and the influence of these challenges on productivity. Since many participants did not have experience with introducing TM into their practice, 70% of participants used EMRs as an implementation analog for describing conflicts between workflows and technological

advances in their primary care office. Participant Q stated, "Productivity is the same. It takes more time. When introduced, it [technology] was stated by leaders that it would save time. No, you have to go home and finish your work or do your work over the weekends." Participant E replied,

> But I can see how technological advantages can actually be a disadvantage to a practice. Because after all, we are clinicians and as clinicians, we need to assess by seeing, hearing, and touching and sometimes we miss that with technological advances. Not so much in TM, but now in electronic health records, I think we spend so much time typing to that we miss something in a history, or physical examination rather than of stopping and listening and touching and watching body language of these patients.

Participant F stated, "What people are starting to do is they think that since you have more technology you have more time." Participant I replied, "Technology in general I think is disruptive to medical practice in a lot of ways especially when it is imposed upon us."

Relating Findings to a Larger Body of Literature

Findings from the study confirm primary care physician administrators are aware of TM; however, primary care physician administrators have not implemented TM to mitigate the workforce shortage. Zanaboni and Wootton (2012) described the uptake as a patchy and fragmented process by the healthcare industry. In face-to-face interviews, a large group (80%) of participants (A, B, C, D, F, G, H, I, J, K, L, M, N, P, Q, & R) expressed a lack of TM experience in their primary care practice. Participants offered

minimal solutions for how TM may influence the workforce shortage. Forty-five percent of participants communicated with their patients using email, but 70% of participants did not communicate with their patients using secure video conferencing.

Twenty percent of participants with TM experience emphasized TM would offer patients greater access to and increase affordability for healthcare services. Some participants (A, B, C, F, M, & N) with TM experience understand how TM influences the business of primary care. Participant B explained that primary care physicians are the navigators of patient needs. Participant A indicated that their business launched the first phase of strategic development for incorporating TM into their business. Strategic development of TM provides insight and allows primary care physician administrators to make decisions about TM implementation.

Participant H said his primary care partners do not value the characteristics of TM differently than a telephone call. Participant H expressed TM may contribute more effectively in an emergency room, specialty practice, or intensive care unit than in a primary care setting. Twenty percent of participants (B, D, E, & F) defined TM as a rural-based primary care physician communicating with an urban-based specialty physician via secure video conferencing.

Participants D and F confirmed reasons for nonadoption of TM. Taylor et al. (2015) mentioned that technological barriers limited implementation and uncertainties about the objectives of TM. Uscher-Pines and Kahn (2014) discovered health plan reimbursement, state licensure regulations, program funding, and capital expense requirements are reasons for nonadoption with technology.

Documentation Analysis

My review of organizational documents supported the TM implementation and utilization theme from the interview data. At the conclusion of my analysis of meeting minutes, I discovered disruption issues such as information technology issues, patient misunderstandings, and staff training for implementing a new technology. The organizational document, *Medical Information*, illustrated the comprehensive collection of medical history required to engage a patient. Additionally, the organizational document, *Notice of Privacy*, noted requirements for safeguarding individually identifiable patient information by restricting access to and seeking patients' permission to disclose medical information in certain circumstances.

Participant 6 commented that the staff needed to integrate patient protection information into the workflow and maintain the security of TM data over the Internet. Participant 12 mentioned the importance of incorporating consent and required signature authentication within TM technology to enhance patient privacy and security. All of the participants used registration, notice of privacy, and consent documents as a part of workflow, and these documents are critical for operational implementation. Additionally, Participant 7 articulated TM training enabled staff to provide surveillance and ensure zero tolerance for security breaches. Data illustrate implementation challenges facing primary care administrators when developing TM strategies.

How Findings Relate to Conceptual Framework

The findings in the study connect to the theory of disruptive technology and the theory of innovations (Fried, 1969; Rogers, 2003). Participants identified workflows and

productivity as a challenge to the implementation of technological advances. Krupinski, Antoniotti, and Bernard (2013) contended primary care administrators typically feel wary of guidelines created externally because of the magnitude of difficulty in integrating them into internal workflows. Previous investigators used these theories to shape the conversation surrounding the advancement of technology in various industries (Rogers, 2003). The important aspects of the disruptive technology theory include three aspects: (a) conflict between antiquated workflows and technology advances, (b) construction of more efficiency, and (c) assessment of complexities affecting the decisions (Fried, 1969). Participant H mentioned complexities with forerunner technologies like email security and integration. With patients, Participant H said patients expect their physician to respond immediately to emails with availability 24 hours a day. Findings of the study confirm the need for primary care physician administrators to devise solutions to simplify the incorporation of TM into workflows. Participants confirmed Levine, Richardson, Granieri, and Reid (2014) regarding simplifying consultative and diagnosis services using TM and argued for evidence relating to time and cost efficiency.

Applications to Professional Practice

Business leaders can apply the findings from this study to professional practice by building TM awareness and education programs for primary care physicians to understand the applicability in clinical practice. Based on the research question, the emergent themes presented in Section 3 are (a) TM awareness and education, (b) TM reimbursement and cost, (c) TM implementation and utilization. Although this study yields meaningful information for healthcare, the research uniquely addresses primary

care physician administrators for developing strategies to mitigate the workforce shortage. Butcher (2015) noted pioneers used exposure and education to inspire other physicians to accept TM. Business leaders may incorporate TM education into operational activities to promote access to specialized healthcare resources. Business leaders may influence strategic agenda items to facilitate TM discussion and development of TM solutions for primary care physicians.

Business leaders may apply the findings from this study to establish TM champions to develop costs and reimbursement strategies aligned with improved healthcare access and better patient experiences. TM champions may lead strategy teams, composed of primary care physicians and healthcare administrators, to determine whether to invest in TM or not invest in TM to mitigate the healthcare workforce shortage. TM champions and workflow teams may examine associated TM costs, costs of implementation, margin implications, and return-on-investment metrics to determine the feasibility of incorporating TM into primary care physician workflows.

Business leaders may determine whether or not to establish TM implementation and utilization protocols in a wide array of treatment algorithms. Business leaders may evaluate the complexities of changing treatment algorithms, processes, and staff productivity to meet the demands of acute and chronic patients. Specifically, primary care physician administrators may apply TM earlier to less intensive patient encounters handled by midlevel triage specialists. When coordinated earlier, primary care physicians may focus and perform tasks associated with chronic care patient management instead of acute care patient engagement. Matching conditions to the clinical expertise ensures

primary care physician administrators streamline productivity objectives when implementing and utilizing TM as a strategy for the mitigation of the workforce shortage.

Implications for Social Change

The implications for positive social change include the potential for healthcare leaders to provide greater accessibility in the delivery of healthcare. Healthcare access is a major business problem for elderly and frail individuals who reside a great distance from a city or who are unable to travel (Martin-Khan et al., 2015). TM models have demonstrated clear benefits for delivering timely care over distance to patients with chronic disease by incorporating their caregivers into treatment plans (Dinesen et al., 2016). All the participants were involved in the delivery of healthcare to patients from rural and underserved areas.

In a complex and dynamic organization, primary care physician administrators may utilize TM to reduce social implications such as lack of transportation, employment demands, and convenience of care associated with healthcare affordability. E. A. Kessler et al. (2016) noted that providers may utilize TM to ameliorate the financial toll on families caused by traditional face-to-face appointments. E. A. Kessler et al. (2016) found that TM lessened the financial burden associated with travelling to and from appointments and taking time off from work. Healthcare leaders may provide TM strategies to minimize transportation needs, reduce fuel consumption, and lower vehicle maintenance cost associated with transporting patients between locations for appropriate treatment visits. Healthcare leaders may apply TM strategies to lessen employer productivity demands, which prevent and do not encourage employees to request time off

to attend medical appointments. In addition, business leaders may develop TM as a convenient and time-saving option for patients burdened with traffic congestion, lack of transportation, and long commutes for healthcare.

Another potential social change implication is the potential for business leaders to utilize and implement TM to connect primary care practices to customers. Primary care physician administrators may use study findings to develop strategies for reducing workforce shortage, improving connectivity for better patient access, and improving customer satisfaction. The success of healthcare system TM strategies can contribute to social change through mobilizing technology to deploy specialized healthcare to rural communities. Primary care physician administrators' success can stimulate greater access, affordability, and outcomes beyond their local community.

Recommendations for Action

Primary care physician administrators in Gwinnett County have a unique opportunity to establish TM as a means for mitigating the workforce shortage. The insights alone have not been strong enough to change the trajectory of adoption in primary care (Martínez-Alcalá et al., 2013). The interviews with participants produced three themes: (a) TM awareness and education, (b) TM cost and reimbursement, and (c) TM implementation and utilization. Based on emerging themes, I list three recommendations emerging from the identified themes.

The first recommendation is for primary care physician administrators to develop internal and external communications designed to build TM awareness and education throughout the community served. For external communications, business leaders may

consider patient advisory committees, focus groups, and marketing resources to educate patients about TM services. Business leaders may use employee think tanks, employee engagement workshops, and new hire training to educate internal personnel. Participants F, G, K, and L mentioned that business leaders may provide educational resources to primary care physicians, patients, and other business leaders. I recommend including TM insights and key learnings in the communications. Participants of this study suggested publishing TM materials and resources at association meetings and through social media channels to ensure their wide distribution. Business leaders may outline healthcare best practices through presentations to primary care physician administrators in attendance at the Georgia Telehealth and American Telemedicine Association forums. The Georgia Telehealth organization represents a constituency of primary care physician administrators focused on successful implementation and utilization of TM. The American Telemedicine Association was one of the first organizations in the United States to solely focus on removing the barriers associated with deploying TM nationwide and abroad. Both organizations strive to lobby regulatory bodies, state and federal legislators, and key stakeholders within the healthcare communities and Gwinnett County primary care physicians.

Participants O, F, G, L, and Q identified the need to change how the treatment protocol includes for chronic patients instead of acute engagements. The second recommendation is to utilize TM early in the healthcare continuum with second-tier providers and allow physicians to work with more chronic patients. Early intervention using TM could provide pertinent information for aligning ailments to the right level of

primary care provider. TM researchers did not robustly discuss shifting TM to second-tier providers, and TM researchers will need to explore optimal TM engagement for evidence.

The third recommendation is to determine TM costs and reimbursements associated with initiating a TM program. Participants B, O, G, and L inquired about the true cost of ownership with TM; with this understanding, participants said they may consider TM for the patient engagements. Fifty-five percent of participants mentioned that low operating margins provide strategic challenges to incorporating TM into work streams. Participant B noted that understanding financial risks of TM prepare decision makers with advantages and disadvantages of deploying TM.

The fourth recommendation is to identify an evidence-based menu of TM uses—appropriate and inappropriate. Participants A, N, O, and R mentioned that a variety of clinical procedures utilizing TM. Participant O noted that emergency room personnel used TM to make timely intervention decisions on treatment options for stroke patients. Participant A noted that rural primary care physicians utilize TM to connect with urban specialists, minimizing healthcare disparities between rural and urban communities.

I will communicate and distribute recommendations through poster exhibitions at the Georgia Academy of Family Practice Physicians, American Hospital Association, American Medical Association, and American Telemedicine Association conferences. I will research opportunities to speak with key opinion leaders in the healthcare industry. I will seek publication in the *Journal of Telemedicine and Telecare,* the leading journal in TM. I will distribute the study recommendations to all participants.

Recommendations for Further Research

My recommendations for further research are in three categories: (a) financial and cost–benefit analysis, (b) workflow and productivity, and (c) change management. Each category may influence the strategic decisions associated with adoption. TM literature does not provide robust evidence for healthcare leaders faced with strategic decisions related to deploying TM technology.

Future researchers could explore the financial return on investment, internal TM interactions between staff, effective utilization of TM in acute versus chronic cases, and understanding change management for sustainability. Each exploration may provide insight into meeting implementation objectives. I recommend further TM research regarding financial advantages and disadvantages associated with the implementation of TM.

Future researchers could conduct TM research to determine and explore workflow implications and productivity implications in primary care. Further research could offer insight to effective utilization and prioritization of TM with nurses and other frontline personnel who make decisions about aligning the right level of care to each customer (Hung et al., 2015). Future TM research could include workflow and productivity assessments for determining acute ailments, and chronic management may improve the quality of care in the primary care setting using TM.

Researchers could provide closer examination to understand change management within the primary care environment that disrupts workflow production and delays revenue generation. Researchers could explore how patient experiences change and

improve through the utilization of TM and how these improvements lead to more outcomes that are beneficial. Last, researchers could determine how insurers will incorporate incentives that drive appropriate utilization to improve outcomes, create better patient experiences, and reduce costs.

For this study, several limitations existed. First, the population for the study consisted of primary care physician administrators working in Gwinnett County, Georgia. A recommendation would be to extend the boundaries or select a new location to explore the decision-making processes of primary care physician administrators in another environment. Second, future researchers may incorporate a pilot study to enhance validity when making significant adaptations to validated study. Third, this research study included the limitation of time constraints. A mixed-methods study would provide future TM researchers with an opportunity to combine qualitative and quantitative methods. Zapka et al. (2013) used mixed-methods research to provide a more comprehensive exploration of rural hospitals participating in tele-critical care intervention than either method alone.

Reflections

This qualitative study involved exploring TM as an augmentation strategy for the mitigation of the primary care workforce shortage. I used interview questions to gather unbiased opinions about primary care physician administrators' perspectives on TM and the workforce shortage. I recommend completing all five actions noted by Leedy and Ormrod (2013), including a small pilot, to enhance the study's validity. I had some preconceived ideas about possible results of the study; however, I did not expect the

themes extracted from the data. I did not realize the complexities associated with leading a healthcare business and how these challenges minimized the implementation of technological advancements. To implement, I learned business leaders must consider implementation plans developed by the people actually doing the work to ensure operational success. I also think differently about the slow rate of change and challenges of established priorities, productivity gains, and patient management risks.

Before collecting data, I did not expect a low level of TM awareness. I thought primary care physician administrators would know more about advanced technologies, not less. My research provided me insights into the manners and behaviors of primary care physician administrators who address complexities of healthcare challenges daily. Based on my analysis, I made TM awareness and education a theme of my research findings.

My research experience was a challenging process. Balancing time between full-time employment, a company downsizing, an entrepreneurial project, and a research study was difficult and burdensome. I contacted 281 primary care physicians; many of these physicians were working for larger hospital systems because of mergers and acquisitions. Of the 281 primary care physician administrators contacted, I received 24 commitments to participate in my doctoral study process. Of the 24 commitments, I established contact with 20 primary care physician administrators. The remaining individuals were not available to participate. I did not expect an 8-month timeframe to meet with primary care physician administrators. I learned more about the challenges of primary care physician administrators.

As I reflected on my participants, I did not use any guidelines for dividing participants into 50% adopters and 50% nonadopters. Thirty percent of my participants adopted TM before each interview. I do not believe the findings slant toward nonadopters (70%), and TM utilization was not the criteria for participation in the study. Each participant answered questions according to his or her experience as a primary care physician administrator and with healthcare technological advances. The research design was purposeful sampling. My criteria provided me with exposure to primary care physician administrators who have content-specific knowledge of the workforce shortage and TM.

Conclusion

A shortage of physicians exists in the United States, and business leaders have not decided to deploy TM as a frontline solution for mitigating the workforce shortages (Bowen et al., 2013). The specific business problem is that some primary care physician administrators may lack critical decision-making knowledge to implement TM as a potential solution to mitigating the physician workforce shortage. The purpose of this qualitative descriptive study was to determine factors primary care physician administrators consider in decision making to implement TM as a potential solution for the growing physician shortage. Grounded in the theories of diffusion of innovation and disruptive technology, I used semistructured interviews and documentation to address the following research question: What influences primary care physician administrators' decision-making processes to implement or not implement TM as a solution for the workforce shortage. Three themes morphed from the study: TM awareness and

education, TM cost and reimbursement, and TM implementation and utilization. The implications for positive social change include the potential for primary care physician administrators to positively influence the healthcare workforce shortage by adding flexibility to manage patient workflow with TM.

Primary care physician administrators encounter technological, financial, political, and legal barriers when developing strategy and achieving optimal healthcare delivery (LeRouge & Garfield, 2013; McConnochie, 2015). Finding the right strategy for easing the workforce shortage in healthcare is essential to delivering and sustaining improved outcomes, improving patient experiences, and reducing costs associated with healthcare management. The leadership challenge for primary care physician administrators is decision making and identifying the value proposition for implementing TM to mitigate the workforce shortage (Bernocchi, Scalvini, Bertacchini, Rivadossi, & Muiesan, 2014). Adopting TM as a strategy, healthcare leaders have the conventional practice of medicine, but understanding the evidence of TM provides vision, direction, and empowerment (Zarchi, Haugaard, Dufour, & Jemec, 2015).

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Appendix A: Invitation to Participate

Email Invitation Template (To be used when requesting participation through email)

Date: XX/XX/2014
From: Kevin McKinnon

Subject: Request to Participate in Doctoral Study Interview

To: Dr. Participant

Hi Dr. Participant,

My name is Kevin McKinnon and I am a doctoral student in the School of Management and Technology at Walden University. I am recruiting Gwinnett County, primary care physicians to participant in my doctoral study. By way of this letter, I would like to invite you to participate in a face-to-face interview to answer 10 open-ended questions.

Purpose of the Study:

The purpose of this qualitative descriptive study is to explore the decision-making processes of primary care physician administrators who respectively have adopted and primary care physician administrators who have limited the adoption of TM as a potential solution for the growing physician shortage. The outcomes of the study could promote positive social change by contributing knowledge that may prove useful in catalyzing the appropriate deployment of TM as a frontline solution for mitigating the workforce shortage of providers. The results of the in-depth interviews and analysis may help primary care physician administrators provide more environmentally friendly strategies to practice medicine.

What will you need to do?

I will need you to schedule a time I may conduct a face-to-face interview with you. During the interview, I will need you to answer 10 questions approved by Walden University Committee members. You answers will be recorded and transcribed. Once the interview is complete, I will transcribe your responses and provide you an opportunity to check the content for accuracy.

Please contact or provide me with a point of contact so I can schedule some time to conduct a face-to-face interview with you.

Thank you for your consideration and participation in this study.

Kevin

Appendix B: Consent Form

You are invited to take part in a research study of telemedicine in the primary care setting. The study is designed to understand the barriers that are associated with accelerating the adoption of TM. The participants will be primary care providers located in Gwinnett County, Georgia and who have been practicing for more than one year in a group practice of at least two members. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. This study is being conducted by a researcher named Kevin McKinnon, who is a doctoral student at Walden University.

Background Information:

The purpose of this qualitative descriptive study was to determine factors primary care physician administrators' use in deciding to implement TM as a potential solution for the growing physician shortage. To obtain data and understand the characteristics of TM adopters versus non-adopters, primary care physician administrators will participant in this study by face-to-face interviews. The participants for the study will represent primary care physician administrators who are working in medical practices in Gwinnett County, Georgia.

Procedures:

If you agree to be in this study, you will be asked to:

- Participate in an audio-recorded, face-to-face interview with Kevin McKinnon.
- Answer 10 open-ended questions.
- Allocate no more than 60 minutes to complete the interview.
- Verify the accuracy of your transcribed comments for accuracy.

Once you are done with this exercise, the data will be coded, analyzed and interpreted.

Here are the 10 open-ended questions:

- From your experience, how do you describe and define the meaning, structure, and essence of your technological experiences with TM as a primary care provider?
- Considering your experiences, please describe your understanding and interpretation of the available options for mitigating the growing shortage of primary care providers.
- What criteria would you use in assessing the potential efficacy of TM when evaluating the available options for the workforce shortage?
- From your experience, please describe how the conflict between workflows and technology advances within your office.

- From your experience, please describe how your organization addresses the need for more efficiency within the business.
- Please explain the factors in assessing the *complexities (*if any) that affect decisions within your healthcare business. Please explain how these complexity factors may affect the adoption of TM.
- From a primary care perspective, how would you describe the implementation steps taken to ensure TM and other technologies meet the objective to improve healthcare?
- Considering your experiences, please describe how TM may influence the internal and external reputation of the organization.
- From your experience, please describe if you feel TM may negatively influence the internal and external reputation of the organization.
- What implementation strategies and techniques have worked for your organization to ensure visibility and trialability of new technologies, such as TM, or any others, you may want to share?

Voluntary Nature of the Study:

This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. If you decide to join the study now, you can still change your mind during or after the study. You may stop at any time without any penalty.

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as fatigue and stress. Being in this study would not pose risk to your safety or well-being. As a benefit, your participation in the study may contribute to how healthcare business leaders create strategies around the growing workforce shortage.

The data in this study may impact social change by augmenting conventional face-to-face appointments with TM protocols. The data in this study may help primary care administrators provide more environmentally friendly weapons to fight disease. This augmentation strategy for primary care can provide an understanding of when TM should be used to treat acute versus chronic ailments.

Payment:

Participants will not receive any payments, thank you gifts, or reimbursements for participating in the study.

Privacy:

Participation in this study will be confidential. The researcher will not use your personal information for any purposes outside of the research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure and under password protected hardware and software. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email at kevin.mckinnon6@gmail.com. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 3121210. Walden University's approval number for this study is 09-29-14-0311567 and it expires on September 28, 2015.

Once this consent form is signed by both parties, you will receive a copy with both signatures.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing the document, I understand that I am agreeing to the terms described above.

Signature of Participant: _____ Date: _____

Signature of Researcher: _____ Date: _____

Appendix C: Interview Protocol

1. Introduce self to participant(s).
2. Present consent form, go over contents, answer questions and concerns of participant(s).
3. Give participant copy of consent form.
4. Turn on Guitar→ recording software, by Apple→.
5. Follow procedure to introduce participant(s) with coded identification; note the date and time.
6. Begin interview with question #1; follow through to final question.
7. Follow up with additional questions.
8. End interview sequence; discuss member-check with participant(s).
9. Thank the participant(s) for their part in the study. Reiterate contact numbers for follow up questions and concerns from participants.
10. End protocol.

Appendix D: Interview Questions for Study Participants

Following are the 10 semistructured interview questions for the study for primary care participants.

1. From your experience, how do you describe and define the meaning, structure, and essence of your technological experiences with TM as a primary care provider?
2. Considering your experiences, please describe your understanding and interpretation of the available options for mitigating the growing shortage of primary care providers.
3. What criteria would you use in assessing the potential efficacy of TM when evaluating the available options for the workforce shortage?
4. From your experience, please describe how the conflict between workflows and technology advances within your office.
5. From your experience, please describe how your organization addresses the need for more efficiency within the business.
6. Please explain the factors in assessing the *complexities (*if any) that affect decisions within your healthcare business. Please explain how these complexity factors may affect the adoption of TM.
7. From a primary care perspective, how would you describe the implementation steps taken to ensure TM and other technologies meet the objective to improve healthcare?
8. Considering your experiences, please describe how TM may influence the internal

and external reputation of the organization.

9. From your experience, please describe if you feel TM may negatively influence the internal and external reputation of the organization.
10. What implementation strategies and techniques have worked for your organization to ensure visibility and trialability of new technologies, such as TM or any others you may want to share?

Appendix E: Permission to Adapt

Email from Dr. Bombast

kevin.mckinnon6 <kevin.mckinnon6@gmail.com> 11/26/13

to izak.benbasat

Professor Bombast, my name is Kevin McKinnon and I am a doctoral student at Walden University. I am in the proposal process and I need your permission to adapt your survey instrument. The survey instrument was in your article with Gary Moore. The title of the article was Development of an instrument to measure the perceptions of adopting information technology innovation in 1991. Will you grant me permission to cite and adapt your work?

Thank you,

Kevin McKinnon
513-258-9326

Sent from my Galaxy S®III

Bombast, Izak <email> 11/26/13

to me

Hi Kevin: you are welcome to use the instrument. Of course, if you make any changes in adapting please note that you are responsible for making sure that the validity and reliability of the revised instrument is of high quality.

Best wishes.
Izak

Appendix F: Request for Archived Data

To gain permission for use of the data included in this doctoral study, please write Kevin McKinnon, 2467 Treehaven Drive, Snellville, Georgia. Confidential information will not be released to protect the identification of study participants.

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Appendix G: Example of Coding Worksheet

Coding Worksheet

Q	P	Data	Theme 1	Theme 2	Theme 3	Theme 4
1	1	We haven't used TM. We have only started to the exploration of the options of TM and we are really in the planning phases right now. We have had a presentation about the options of TM. Also we do have an internal physician that is working on TM. The biggest challenge is getting beyond the exploratory phase to the implementation phase.	early stages	options of TM beyond exploration	NonAdopter	
1	2	When you say TM, are you talking about TM that you will talk to patient on a camera? (Clarifies)	more clarification			
1	2	I do have emir experience. I do not have tm. #1 a lot of insurances companies are not paying for this. They have a code for it. Medicare has a code, at this time, they are not reimbursable. The only telemedicine I have is phone conversations. And the only tm I have is email and my MA (medical assistant) will relay my answers to patients to their questions. I understand that more and more doctors like dermatologists, in the rural communities, and psychiatrist who do not exam patients that they do not touch patients and I heard they use TM in the rurtal areas. What they do with payment is key. It takes time to do this worth the patients.	reimbursement	conducted telephone conversations	more specialties using telemedicine than peps	NonAdopter

Appendix H: Acknowledgement by Author

Clarification 4 messages

Kevin McKinnon <kevin.mckinnon6@gmail.com> To: "Benbasat, Izak" <izak.benbasat@sauder.ubc.ca>
Dr. Benbasat,
Tue, Sep 1, 2015 at 8:33 AM

I apologize for any confusion in our communication. I spoke with my chair again and he clarified exactly what was needed. As I mentioned previously, this is my first time conducting qualitative research and I have made a few errors in my doctoral journey. This one was a teachable moment for me. I learned that I cannot take a valid/reliable instrument, modify it to use as interview questions within a qualitative study, and then make claims to the validity or reliability of the modified instrument within my particular study only. The only claims I can make about validity and or reliability in regards to the instrument is when I refer to your previous work in my study.

There are several formalized steps I need to take to ensure that the way I used the instrument still remains high in regard to validity and reliability in my study, which goes outside the scope of the qualitative study. My chair and other reviewers are requesting that I list the limitation to my study in regards how I used the instrument.

I am very appreciative of your ongoing permission to use the instrument in my study. Once I receive my doctorate I look forward to conducting additional research with this important knowledge in mind.

Regards,
Kevin

Benbasat, Izak <izak.benbasat@sauder.ubc.ca>
To: Kevin McKinnon <kevin.mckinnon6@gmail.com>
All the best Kevin
To: alen.badal@waldenu.edu
Here is the response from Dr. Benbasat.
[Quoted text hidden]

Alen Badal <alen.badal@waldenu.edu> Tue, Sep 1, 2015 at 2:43 PM To: Kevin McKinnon <kevin.mckinnon6@gmail.com>
Great. Sounds like he's ok with it to me. You explained it. Now work with the revisions and address this all per Dr. Lazar's notes. Limitations and delimitations. Thanks ab
[Quoted text hidden]